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# Original Contributions

## Obstruction of the Alimentary Tract in the Neonatal Period

GEORGE A. HALLENBECK, M.D.  
Rochester, Minnesota

OBSTRUCTION of the alimentary canal in the first four weeks of life is rare enough to be forgotten easily but common enough to be part of the experience of almost any physician whose practice includes treatment of babies. Sometimes, as in babies who have atresia of some part of the gastrointestinal tract, the presence of obstruction requiring surgical treatment is obvious soon after birth. On other occasions, the presence of vomiting and abdominal distention in the absence of complete obstruction can make it difficult to decide whether or not an operation is indicated. Newborn infants are well able to tolerate even extensive operative procedures on the gastrointestinal tract if such operations are performed when the children have the proper balance of fluid and electrolytes and before they have become depleted by starvation. Undue delay in necessary surgical intervention leads to higher operative mortality rates. Accurate and prompt pre-operative diagnosis presupposes a working knowledge of the entities likely to produce obstruction in children in this age group, just as adequate surgical treatment demands the ability to recognize the various lesions at the operating table and to apply appropriate treatment.

The purpose of this presentation is to discuss broadly the usual causes of obstruction of the alimentary tract in the neonatal period and to indicate the operative remedies that have been found most effective for each. A list of entities most likely to be encountered is presented in Table I and will serve as a framework for the discussion. The first four conditions listed permit accurate

diagnosis and the surgeon ordinarily knows the cause of obstruction before operation. The exact diagnosis in the remaining conditions may be suspected or even fairly certain but it is often impossible to make it preoperatively.

TABLE I. COMMONER CAUSES OF OBSTRUCTION OF THE ALIMENTARY TRACT IN NEWBORNS

Atresia of the esophagus
Hypertrophic pyloric stenosis
Malformations of the anus
Incarcerated hernia (inguinal or diaphragmatic)
Atresia or stenosis of the intestine
Incomplete rotation of the midgut
Meconium ileus
Duplications of the intestinal tract
Obstruction associated with Meckel's diverticulum
Annular pancreas
Aganglionic disease of the colon

### Atresia of the Esophagus

Atresia of the esophagus means complete interruption of the lumen of the gullet, an anomaly that rarely occurs alone, usually being encountered in conjunction with a fistula between the esophagus and the trachea. The upper segment of the esophagus ends blindly and the lower end communicates with the trachea in more than 90 per cent of cases. In the few remaining cases, either the upper segment or both segments join the trachea. In the common variety, air from the trachea has ready access to the intestines, which promptly acquire the normal gas pattern visible on roentgenologic examination. What is more important, gastric contents and spilled-over saliva are prone to enter the respiratory tract, where they cause pneumonitis. It is of great importance that the diagnosis be made early so operation can be performed before widespread pneumonitis increases the risk to the patient.

The two signs that should make one think of possible atresia of the esophagus are excessive salivation and apparent inability to swallow. Salivation is almost continuous. Although babies so

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affected usually try to eat, swallowing is followed by coughing and cyanosis. Faced with this situation, the physician should try to pass a small rubber catheter into the esophagus. If its progress is blocked in the upper part of the thorax, esophageal atresia may be present. A few drops of iodized oil injected into the catheter before a roentgenogram is made will delineate the blind end of esophagus and usually will demonstrate the absence of a fistula between this blind end and the trachea. If the roentgenogram also shows air in the intestines, as it usually does, the presence of a fistula between the trachea and the lower end of the esophagus is established (Fig. 1). Use of excessive amounts of iodized oil is to be avoided.

If untreated, children who have this disorder die in a week or so of pneumonia and starvation. The earlier the diagnosis is made, the better is the child's condition likely to be and the better are his chances to survive operation.

Once the diagnosis is made, the baby should be placed in a semisitting position with suction applied continuously to the esophagus to minimize the chance for secretions to enter the lungs; antibiotics should be administered, oxygen should be provided by means of a tent or incubator and an attendant should be constantly present to clear the mouth of secretions, should they accumulate. If the diagnosis has been made late, time may be required for the pneumonitis to improve and for hydration by intravenous injection of fluids.

In the earliest era of surgical treatment, successes were few and far between and followed an interminable and expensive series of operations in which the gullet was exteriorized in the neck, the tracheo-esophageal fistula closed, gastrostomy performed and a subcutaneous channel constructed between the esophagus and stomach. This cumbersome method has been abandoned in all but a few unusual cases in favor of one-stage closure of the fistula and end-to-end anastomosis of the esophagus performed as soon as possible after birth. At the present time, a survival rate of 50 per cent appears acceptable, although better results have been reported.<sup>1</sup> Haight,<sup>2</sup> who was instrumental in introducing the one-stage operation for tracheo-esophageal fistula, recently reported recovery in ninety-four (58.7 per cent) of 160 patients operated on between 1939 and 1955. Fifty-one (67.1 per cent) of seventy-six patients operated on during the last five years recovered. Seven died later, leaving forty-four (57.8 per cent)

of the original group living. Survivors do exceedingly well. Perhaps a third will need occasional dilatation of the esophagus during the first year or so of life.

### Hypertrophic Pyloric Stenosis

Hypertrophic pyloric stenosis, the most frequently occurring lesion on this list, is the familiar obstructing hypertrophy of the muscle in the pyloric region; it is commoner in boys than in girls. Vomiting seldom occurs before the tenth day of life and the vomitus virtually never contains bile; these facts are of great aid in differentiating pyloric stenosis from atresia and pronounced stenosis of the intestine, in which vomiting is present soon after birth, and from other causes of obstruction distal to the ampulla of Vater, in which vomitus containing bile is regularly present. Presence of visible peristaltic waves passing from left to right across the upper part of the abdomen after feeding is typical. With persistence, the pyloric tumors usually can be palpated. The Ramstedt operation of pyloromyotomy, in which the serosa and muscularis on the anterior aspect of the pyloric tumor are incised longitudinally to allow the underlying mucosa to bulge into the defect, carries a post-operative mortality rate of less than 1 per cent and gives results that are among the best in the realm of surgical treatment.

### Malformations of the Anus

The embryo passes through a period in which the urogenital tract and the intestine share a common cloaca separated from the exterior by a cloacal membrane. The genitourinary system and the rectum normally become separated completely and the rectum gains its normal opening in the perineum. Arrest of this process can produce a variety of malformations estimated to occur once in 5,000 births. The classification of imperforate anus of Ladd and Gross<sup>3</sup> is useful in organizing these disorders. This distinguishes four main types as follows: Type 1, stenosis at the anus (6 per cent); Type 2, membrane obstructing anus (3 per cent); Type 3, imperforate anus with rectum ending above it (87 per cent) and Type 4, normal anus with rectal pouch ending blindly above it (4 per cent).

In about 70 per cent of cases, the anomalies have associated fistulas connecting the rectum with the urinary tract, vagina or perineum. Such fistulas occur in about 15 per cent of Type 1 and

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Type 2 abnormalities and in about 80 per cent of Type 3 malformations. In males, the fistulas are rectovesical, rectourethral or rectoperineal. In females, the fistulas are between the rectum and the vagina, or the rectum and the perineum.

The Type 1 anomaly, anal stenosis, is usually treated best by dilatation, although anoplasty occasionally may be necessary.

The Type 2 anomaly is treated by incising or excising the obstructing anal membrane, keeping the anus patent by dilatation afterwards.

The Type 4 anomaly sometimes can be treated by incision per rectum followed by dilatation if the upper segment is near enough to the lower one. In other cases, an abdominoperineal operation with anastomosis performed perineally after Swenson's technique is the preferable definitive operation; temporary colostomy may be the best way to tide the infant over the first nine months or year of life.

Some Type 3 anomalies can be treated by means of a perineal approach, whereas others require a combined abdominoperineal operation. In general, if the rectal pouch is within 1.5 cm. of the perineal skin or if a rectoperineal or low rectovaginal fistula is present, repair from the perineal approach is possible and should be done as a primary procedure. In the other cases, one either can perform colostomy and defer the definitive operation or can carry out the abdominoperineal pull-through procedure at birth. The one-stage procedure is probably preferable when good anesthesia for newborn infants is available, when the surgeon's experience in both the technical details of such operations and the rather exacting post-operative care justifies it, and when the baby is lusty, weighs more than 6 pounds and has no other serious anomalies to increase the risk. Any fistulas with the vagina or the urinary tract are disconnected at this time. Colostomy is still a good operation when circumstances justify it. Use of the transverse colon leaves the sigmoid free for later use but probably is followed more frequently by prolapse than is sigmoid colostomy. The latter is satisfactory if it is done as near the descending colon as possible.

### Incarcerated Hernia

Incarcerated inguinal hernia needs no explanation. Its presence should be obvious if it is sought. Treatment, if attempts at reduction fail, consists of surgical reduction and repair of the hernia.

If the hernia can be reduced, often with the aid of sedation, it is advantageous to allow a day or so to pass before repair is attempted, since the edema of the sac that regularly accompanies in-



Fig. 1. Plain roentgenogram from a newborn infant with atresia of the esophagus and a tracheo-esophageal fistula. The catheter and iodized oil delineate the blind end of the upper portion of the esophagus. The presence of air in the intestine proves that the lower end of the esophagus communicates with the respiratory tree.

carceration makes the tissues friable and somewhat more difficult to handle than is the case when repair is elective.

Congenital diaphragmatic hernias, usually through the posterolateral portion of the dia-phragm, may allow varying portions of the liver, spleen, stomach, small intestine and colon to mi-grate into the right or left thoracic cavity. Vomiting caused by obstruction may be present, al-though cyanosis and dyspnea due to compression of a lung are often more prominent findings. The diagnosis can be made readily by plain roentgenograms, which show evidence of abdominal viscera in the thorax. Surgical repair of the hernial opening should be carried out through an abdominal approach as soon as possible.

### Less Obvious Causes of Obstruction

Once patency of the esophagus and anal canal is demonstrated and the presence of pyloric stenosis and hernias is excluded, one can assume that the newborn child who vomits either has a feeding problem that may respond to changes in the formula or has one of the other types of organic obstruction listed in the table. The task of differentiating infants for whom laparotomy is indicated from those for whom medical measures should be employed can be difficult at times, but the severity and unremitting nature of the obstructive symptoms in babies with organic obstruction make the decision to operate clear in most cases. Once the signs and symptoms have suggested intestinal obstruction, plain roentgenograms of the abdomen taken with the child in the upright and supine positions become the mainstay of diagnosis. Although it occasionally may be necessary to introduce barium sulfate into the stomach or colon, use of a contrast medium is unnecessary in most instances. Characteristics of these roentgenograms will be mentioned as the various lesions are discussed.

**Atresia or Stenosis of the Intestine.**—Either atresia, meaning complete loss of continuity, or stenosis may occur in any part of the small intestine or colon; multiple sites occasionally are involved. Atresia of the intestine always produces symptoms of obstruction at once; stenosis usually causes symptoms in the first few weeks of life but may be of such modest proportions that trouble does not occur for a year or more. Plain roentgenograms of the abdomen usually will show gas scattered widely throughout the gastrointestinal tract when stenosis is present at some point. If the stenosis is sufficient to produce symptoms of obstruction, dilatation of part of the alimentary canal above the lesion usually is present. In these cases, study by means of barium can be revealing. When atresia is present, gas can go no farther than the atretic segment and, particularly when the atresia is in or above the midjejunum, the roentgenogram can be diagnostic (Figs. 2 and 3).

Treatment is surgical in either of the situations just described. The intestine beyond the site of stenosis is typically large enough that side-to-side anastomosis between it and the dilated intestine above can be done without difficulty. Stenosis of

the duodenum below the papilla of Vater is best handled by duodenal jejunostomy, whereas that above the papilla requires gastroenterostomy. When atresia is present, the intestine distal to the atresia is empty and extremely small, while that proximal to it is hugely distended. Even after the dilated segment has been decompressed and the other segment distended with saline, considerable disparity remains between the sizes of the two. Because of this, side-to-side anastomosis naturally was favored by most surgeons. Gross<sup>3</sup> noted that, although good results frequently were obtained when jejunal atresia was treated by this method, fatality rates for anastomosis in the ileum were extremely high. He obtained better results by exteriorizing the two blind ends as a double-barreled ileostomy, clamping the spur between the ends later by the old Mikulicz technique and finally closing the ileal stoma. Others<sup>4-7</sup> favor primary anastomosis with decompression of the proximal loop of intestine by means of an enterostomy tube and end-to-end union of the parts despite the difference in their sizes.

**Incomplete Rotation of the Midgut.**—During intra-uterine life, the midgut undergoes rotation in a counterclockwise direction, with the superior mesenteric vessels as its axis. As a result of these movements, the cecum comes to lie in the right lower quadrant of the abdomen and the transverse colon comes to lie in front of the superior mesenteric vessels and duodenum. Fusion of the root of the mesentery of the small intestine and that of the right portion of the colon to the posterior body wall follows this process and establishes the normal anatomic state. This process can be interrupted at any stage. The result sometimes is relatively unimportant, as when the cecum is unusually mobile, whereas at other times it is productive of intestinal obstruction. The latter may or may not be severe enough to cause recognizable trouble during the neonatal period.

Obstruction can be caused by either or both of two mechanisms, namely volvulus of the entire small intestine, made possible by the lack of attachment of its mesentery to the posterior body wall, and obstruction of the duodenum caused by extrinsic pressure applied to it by a band of fibrous tissue attaching the misplaced cecum to the body wall to the right of the duodenum. Described by Ladd,<sup>8</sup> in 1933, this attachment is often referred to as Ladd's band. Obstruction caused by incom-

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plete rotation of the gut may appear complete in some instances of volvulus or it may present as incomplete obstruction of the duodenum when Ladd's band is the prominent factor. Roentgeno-

on their right and displaced to the left side of the abdominal cavity, thus reproducing an earlier stage of embryologic development. This completely liberates the duodenum. Failure to do this may

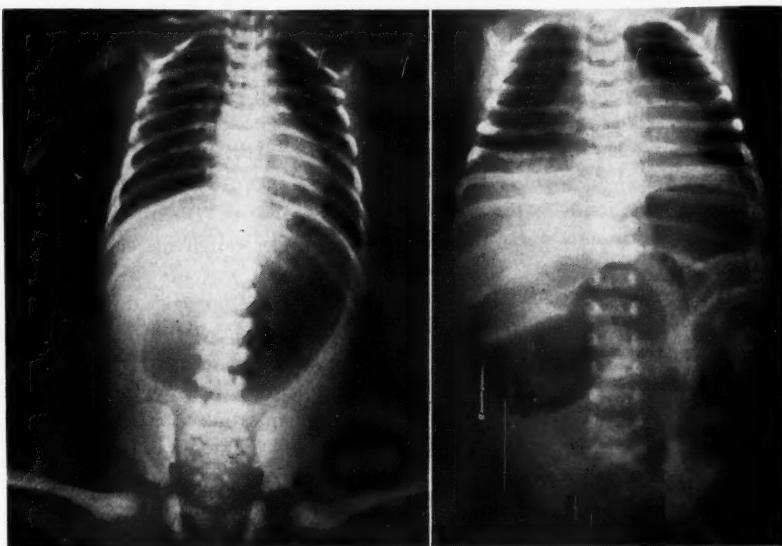


Fig. 2. Plain roentgenogram from a newborn infant with atresia of the duodenum. The gas shadows are limited to the stomach and the first portion of the duodenum.

Fig. 3. Plain roentgenogram from a patient with atresia of the jejunum. Gas is evident in the stomach, duodenum and part of the dilated jejunum, but the usual pattern of gas scattered throughout the small intestine is not present.

logic examination of the colon and the duodenum with the aid of barium sulfate can be helpful if the symptoms are mild enough that indications for surgical intervention are not clear-cut. When it is obvious that an operation is needed, my associates and I choose to spare the infant the stress of these tests.

When the abdomen is opened, one sometimes finds the cecum in the epigastrium or even to the left of the midline and one sometimes finds all the colon hidden by small intestine, which may be of dusky color as the result of volvulus. When this small intestine is delivered from the wound, it is seen to be twisted, usually in a clockwise direction, around its mesentery. The volvulus should be reduced. The picture can be confusing; one must not conclude erroneously that some kind of internal hernia is present and begin fruitless dissection with this in mind. Once the volvulus has been reduced, the cecum and ascending colon in all cases must be freed of attachments

mean continuation of obstruction. For some reason, recurrence of volvulus is rare.

**Meconium Ileus.**—This is a form of intestinal obstruction in the newborn in which the terminal portion of the ileum is plugged and obstructed by unbelievably sticky mucilaginous meconium. It is part of a more widespread disorder, including fibrocystic disease of the pancreas and production of extremely thick sticky mucus in the intestinal and respiratory tracts. The great diminution in secretion of digestive enzymes by the pancreas is credited with allowing the meconium to become viscid enough to obstruct the gut. If the child can be tided over this crisis, he will have nutritional difficulties because of poor absorption of food and will have chronic infection of the respiratory tract. In many cases, the former condition can be controlled fairly well by oral administration of pancreatic extracts and the latter by use of antibiotics. Plain roentgenograms of the

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abdomen in this condition may show a disparity between the size of loops of distended small intestine, associated with the presence of tiny flecks of calcium. Masses sometimes can be palpated in the abdomen.

Perforation of the intestine occasionally has occurred before operation can be performed; perhaps it can happen prenatally. If this is the case, the peritoneal cavity may be obliterated, with dense adhesions causing agglutination of loops of intestine. The outlook in such cases is hopeless. In other cases, the technical problem is one of relieving the obturating obstruction in the terminal part of the ileum. Efforts to remove sticky meconium from the intestine usually fail, although some successes have been reported.<sup>9</sup> Gross<sup>3</sup> has reported better results after removal of the dilated portion of ileum that contains the semi-solid meconium by means of the aseptic Mikulicz exteriorization technique already mentioned. The proximal opening serves as the ileal stoma, whereas the distal opening is an orifice into which solutions of enzymes can be perfused to clear the distal part of the ileum and the colon of meconium. The spur is clamped and the opening is closed later.

*Duplications of the Alimentary Tract.*—These duplications, sometimes called "enterogenous cysts," may occur any place in the alimentary canal. They vary in shape from small or large spherical structures closely attached to the gut to long tubular organs paralleling the intestine. Some are closed, whereas some communicate with the intestine and are, therefore, like diverticula. Obstruction is only one of several ways in which these structures can produce symptoms. When obstruction occurs, it is usually because a tensely filled cyst attached to the gut applies pressure to it. Only twenty of sixty-eight patients reported on by Gross<sup>3</sup> required treatment during the first four weeks of life. Duplications of the intestine are best excised. Usually they are in such close contact with the intestinal tract, sharing its blood supply, that adjacent intestine also must be removed.

*Meckel's Diverticulum.*—An occasional example of Meckel's diverticulum has a fibrous cord attaching its tip to the navel or to the root of the mesentery. Loops of small intestine can become incarcerated behind or around such a band to become obstructed or even gangrenous. The situation is dealt with as it would be in the adult.

*Annular Pancreas.*—A rare disturbance in the embryologic development of the pancreas causes a ring of pancreatic tissue to surround the second portion of the duodenum. This anomaly may be asymptomatic, may cause mild obstruction noted only in adult life or may produce a high degree of obstruction of the duodenum, requiring treatment in the neonatal period. Duodenoejejunostomy gives good results, being preferable to gastroenterostomy and probably to direct attack on the constricting ring.

*Aganglionic Disease of the Colon.*—Congenital absence of ganglionic cells in Auerbach's plexus in the distal part of the colon, the anomaly that causes Hirschsprung's disease, or aganglionic megacolon, and that is always associated with obstipation in the neonatal period, may produce virtually complete obstruction with diffuse distention of the entire small intestine and proximal portion of the colon. When gross lesions cannot be found at laparotomy for intestinal obstruction in a newborn infant, one must think of this disease. Megacolon develops later as a result of obstruction offered by the faulty terminal segment of colon and is not present at birth. Extramucosal biopsy of the rectosigmoid may provide the diagnosis, since the ganglionic cells will be absent in Auerbach's plexus between the circular and longitudinal layers of muscle. Often the diagnosis will be presumptive, however, and one is justified in making a transverse loop colostomy in such cases, planning to carry out Swenson's operation later.

### Summary

A review has been made of pertinent points concerning the various types of obstruction of the alimentary canal likely to be encountered during the neonatal period. Such information is essential to the physician and surgeon who must diagnose these conditions and treat the children so affected. The safety factors in the surgical treatment of such infants are smaller than they are in adults. Experienced anesthesiologists and an understanding of the management of fluid and electrolytic balance in infants are essential to success. Although disappointments are common and although multiple and sometimes hidden anomalies other than the one being treated can thwart success, good results often are achieved and are extremely gratifying.

(References on Page 275)

MINNESOTA MEDICINE

# Treatment of Varicose Veins

## A Twenty-five Year Reflection

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TIME, and time alone, will give the best and most conclusive answer to all questions relative to the value of any method of treatment in the field of medicine. It is the checking up on our work and end results from year to year that finally permits us to say, with conviction: "This is the best method of treatment today." After twenty-five years of treating varicose veins, we can assess our end results and say "This is the best method of treating varicose veins as of today."

Even before the days of Hippocrates, varicose veins were recognized as a cause of pain and disability. Probably no pathological condition has received more study and effort at correction than has varicose veins. The early efforts were incorrect and held a high mortality rate, and the modern era of treatment really dates from the invention of the hypodermic syringe by Dr. Pravaz in 1854.

The next great step was in 1892 when Trendelenburg<sup>1</sup> recognized and proved the reverse flow of blood in the varicose veins by the test that now bears his name. During intervening years efforts for the elimination of the varicose veins have included in the main injection and operative methods. First one would be claimed the better and then the other. Each era and cycle would be an improvement over the other. The solutions used for the injection treatment were corrosive and destructive. In 1908 some countries forbade their use. Study and research have corrected many of the errors, and today we inject varicose veins with impunity, and for the selected case it is the ideal method.<sup>2,3</sup>

Following the Trendelenburg teachings several distinguished surgeons such as Charles Mayo, Babcock, Homans, Mataz and others spent much effort developing operative methods for the removal of the varices. Their efforts were attended by high mortality rates due to thromboembolism.

It was Sicard in 1914 and Linser in 1921 that

Presented before the Hollywood Academy of Medicine, Hollywood, California, September 9, 1954.

first developed the idea of ambulation following the treatment. Their injection treatments were carried out as outpatient services. It was their improved results in comparison with those following surgery that impelled me to carry on.

TABLE I.

1932 through 1949
5791 Ligations with retrograde injection and follow-up injections.
1950 through October, 1955
5147 Ligations with stripping and follow-up injections.

In 1928 my short term results were so good that I advocated the injection treatment of all cases of varicose veins.<sup>4</sup> As time went by I realized my error after seeing many moderate cases and almost all of the severe cases recurring. Still these efforts and successes were an improvement over anything done before. My sixty-fifth case died of a pulmonary embolus but the pathologist who did the autopsy decided the embolus most probably came from a pelvic infection which she had at the time.

During this same time surgeons were correcting their errors and doing better work with the consequent reduction of pulmonary emboli.

The next forward step was a combination of the two methods of treatment, doing a ligation of the veins in cases of proven reverse flow, and the use of the injections to obliterate the veins below.<sup>5,6</sup> It was only after years of work that surgeons realized that the best end results were achieved with the ligation high "above" all tributaries and flush with the wall of the femoral vein at the sapheno-femoral junction.

John Homans<sup>7</sup> was the first surgeon to emphasize this particular bit of technique. To him we must give credit for laying the foundation for our present-day success. Numerous papers were written on the subject of the new and modern treatment of varicose veins by doing the high sapheno-femoral ligation followed either immediately or later with injection of the distal segments.<sup>5,8</sup> Sev-

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eral movies<sup>9</sup> were made to show the detailed technique, and we thought we had reached the ultimate in the treatment of varicose veins.

During the period of 1945 to 1947 I tried to assess my results, not in periods of months, but of years. Even though we had tried to do the best surgery we could with careful follow-up injections in all cases, we often found complete failure with the ligation and retrograde injection treatment of varicose veins. They often recanalized and became as large as when first seen.

Further study of these cases would often show a good sapheno-femoral ligation with the proximal stump closed but with the percussion pulse (P.P.T.) felt through the lower thigh and disappearing in the mid or upper thigh. The multiple tourniquet test would show that the reverse flow came from the mid or upper thigh but not from the groin. In many cases we found the reverse flow was from a perforator vein in the lower leg. We then started picking up the recanalized vein internal to the knee and passing the stripper upward. To our surprise we found it would often pass up to the fibrosed segments just below the main scar at the groin. The stripping of this segment upward would often reveal a perforator or communicating vein in the mid or upper thigh. In passing the stripper downward we found many perforator veins in the lower leg as a cause of recanalization.<sup>10</sup> This stimulated greater study to locate the perforator or communicating veins before any surgery was done, and we found that with more careful examination the incompetent perforator veins could usually be located and marked before the primary operation was done.<sup>11</sup> This combination of a careful preoperative examination and study of each individual case followed by "adequate" surgery for the case at hand and then the use of injection treatment for the scattered and remaining small, tortuous, varicose segments, has produced a good and lasting result in practically all cases.

"Adequate" surgery, mentioned above, refers to a ligation flush with the femoral vein above all tributaries, followed by stripping and dissection of all the main varicosed segments below, with injection of all small scattered tortuous segments remaining.<sup>12,13</sup> A simple high ligation by itself, as advocated by some surgeons, has proved to be a failure in so many cases that it can be mentioned only to be condemned.<sup>14</sup>

It must be stated at the outset that we believe

that the great majority of varicose veins are best explained by a weakness of the vein wall, permitting it to dilate and thus render the valves incompetent, permitting the reverse flow of blood.<sup>15,16</sup> We do see some cases of congenital varicose veins, and instances of congenital arteriovenous fistulas occur. In other cases there has been a destruction of the valves in the veins by phlebitis. Any of these factors render the veins more vulnerable to the increase of the intra-abdominal pressure associated with work, heavy lifting and pregnancy. Moreover, if the weakness persists, we must expect additional varicose veins to form as the years go by. Experience has proven this to be true.<sup>17</sup>

Varicose veins occurring during pregnancy may be an aggravation of pre-existing varicosities, but many cases with rapid formation and development must be explained on some other basis.<sup>18</sup>

There is much evidence in support of the theory that the smooth muscle and connective tissue of the body loses its tone and relaxes with pregnancy. The vulvar muscles and pelvic ligaments also relax. Pregnant women often develop a hydro-ureter many times the size of a normal ureter and yet it will rapidly return to normal following delivery. The urological examination does not reveal evidence of pressure and obstruction to account for this. Often varicose veins develop rapidly over the thighs and lower legs during the second and third month of a pregnancy. At that period of gestation the uterine fundus is not large enough to cause either obstruction of the ureter or of the venous flow from the lower extremity.

This can perhaps be best explained on a hormonal basis.<sup>18</sup> The intramuscular administration of ovarian hormones (Estro Luteum Solution, Lincoln Laboratories) has given marked relief of the pressure, pain and fullness in many cases.<sup>19</sup>

The best results are obtained when the hormone therapy is started before the third month and continues through the sixth month. The usual methods of relief, elastic bandages on the lower legs with elevation of the lower extremities for twenty minutes three times a day, should be continued.

Probably the foremost point in the treatment of varicose veins is the individualization of therapy to the particular needs of the patient. Each patient must be studied separately with a detailed history and thorough examination. Venous pa-

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thology must be differentiated from arterial pathology. Individuals with familial, hereditary varicose veins must be given a different prognosis than those with the postphlebitic syndrome. Individuals with stasis edema must not be classified in the same category as those with lymphedema or lipedema. Swelling may be due to incompetent veins, hypothyroidism or cardiorenal disease. The pain may be due to varicose veins, arthritis, slipped disc, or local inflammation. Differential diagnosis is just as important in peripheral vascular disease as it is elsewhere.

The history of onset is important. Did the trouble come on gradually or rapidly; at what age; was there an injury, illness or operation about the same time; was a pregnancy involved?

The majority of patients seen by the vascular surgeon are at least middle aged, although the condition may have been present for several years. This age group can have arterial or venous disease, or both. The typical patient with arteriosclerosis gives a history of cold extremities and claudication; the pain comes on after walking a fairly definite distance and disappears within a few minutes after the patient stops walking. Night pain and ulceration are late manifestations. Examination of the arteriosclerotic lower leg usually reveals a pale, dry skin, often resembling parchment. A cold, wet, clammy skin usually indicates vasospasm.<sup>21</sup> Rubor, especially of the toes and especially near an infected ingrown toe nail, is common. Trophic changes include loss of hair and ridged nails. The skin temperature is often 5 to 10 degrees below normal. The dorsalis pedis and posterior tibial pulsations are diminished or absent and the oscillometric readings are low. There is usually no swelling unless infection is present or the patient sleeps with the lower leg hanging over the edge of the bed for comfort. Arterial ulcerations are usually located on the toes, heel or lateral surface of foot and ankle.

Seventy-five per cent of the patients with venous pathology have a familial history of varicose veins and often these patients will describe exacerbations with pregnancy or following a period of inactivity due to injury or illness. The typical findings of enlarged superficial veins, edema and cyanosis easily account for the tired, heavy feeling later in the day. Prolonged standing or sitting causes pain which is relieved by quick calf muscle contractions. Nocturnal leg cramps are a common complaint before surgical treatment. Stasis

pigmentation gradually increases as long as the swelling is unchecked. It very slowly fades if good circulation is re-established. Varicose ulcers are usually located on inner lower leg and can be temporarily improved by elastic support, frequent calf muscle contractions and rest periods. Definite treatment requires careful search for, and elimination of, any varicose veins running under or feeding into the ulcer.

### Differentiation as to Source of Reverse Flow

Which system is involved—long saphenous or short saphenous, or both?<sup>22</sup> This is determined by percussion pulse transmission (P.P.T.) and the Trendelenburg test. These two tests form the basis for any good examination and give information obtainable in no other way. The P.P.T. helps us chart the course of the veins. The Trendelenburg test helps locate the origin and determines the amount of leakage. Not infrequently the reverse flow originates in the long saphenous but, because of communicating vessels, the short saphenous veins are enlarged, and vice versa.

Often one or more incompetent perforator veins allow reverse flow into and cause dilatation of, the long or short saphenous system. Good therapy requires ligation of the perforator vein and closure of the defect in the fascia. The perforator veins should be diligently searched for and their location carefully marked *before* surgery.<sup>11,12</sup> They can be felt as true openings, in the fascia. Finger tip pressure in these soft spots or holes is painful, as is the stretching of any opening in the deep fascia. Perforator veins are most commonly found on the internal surface, mid and lower thirds of lower leg. They may occasionally be located below the internal malleolus and feed upward into an ulcer, keeping it open. They may sometimes be felt in the base of a healed ulcer or dermatitis area and may be the cause of frequent recurrences. The Trendelenburg test helps to locate these perforators. If the veins below the tourniquet fill in ten seconds, you can be sure that one or more incompetent perforator veins are present.

### Treatment of Varicose Veins

**Preoperative.**—General measures: Eliminate active infection including that due to fungus; encourage habit of frequent calf muscle contraction; reduce obesity; correct systemic conditions such as anemia, hypothyroidism, et cetera.

## TREATMENT OF VARICOSE VEINS—McPHEETERS

The very obese patient with varicose veins on the thighs and lower legs will usually have a poor end result. As a rule new varicose veins will form within a few months and they are hard to find and inject well in the obese leg. Such patients are also more liable to develop swelling and edema following radical dissection and stripping.

*Surgical.*—(1) Large varicose veins with definite reverse flow must be ligated wherever the reverse flow begins; the distal segment must be removed by stripping and dissection wherever possible.<sup>8</sup> Perforator veins must be carefully sought, dissected out and ligated.

Ligation at the source, plus retrograde injections of the distal segment, is satisfactory only for a superficial, tortuous vein of moderate size such as the lateral femoral cutaneous type, often found on the antero lateral thigh.<sup>5</sup>

(2) Small varicose veins with no reverse flow can be sclerosed by injection therapy.<sup>4,23</sup>

(3) Skin grafting: If the varicose veins have been present for years with the development of severe chronic cellulitis and recurrent ulcer formation, it may be best to do a radical excision of the area down to the deep fascia and the immediate application of a split skin graft. These patients must wear support for "many months" and often for the remainder of their lives.<sup>24,25</sup>

*Postoperative*—Careful and complete follow up injection therapy of every case should be done at the office one or two months after surgery and then yearly thereafter.

Post-phlebitic patients with deep vein incompetency may not be entirely relieved of their stasis by elimination of the superficial varicose veins.<sup>27,28</sup> For them the "new way of life" as advocated by Luke<sup>14</sup> is imperative. They must not permit the development of edema. Elastic support, rest periods with feet at least on a level with the heart (the sitting position does not correct the edema), frequent calf muscle contractions, et cetera, all help. If necessary a change of occupation is preferable to the damage caused by constant edema.

Most cases of stasis dermatitis improve with good circulation; stubborn, resistant cases often are benefitted by superficial x-ray therapy. They should be referred to a skin specialist. If the case presents the cold, clammy, wet leg showing

evidence of vaso spasm being present, then a lumbar sympathectomy will often give much help.<sup>21,22</sup>

*Recurring cellulitis:* For this condition we must control the edema, give irradiation therapy, control the fungus infections about the toes and feet, and give Gantrisin 2 gm. daily for one week in each month for four to six months.

Then finally the procedure needed to be done is:

(1) The injection method for the early formations and small veins with no reverse flow.<sup>4,23</sup>

(2) Ligation wherever the reverse flow begins followed with a complete stripping and dissection in all extensive cases.

(3) Ligation and then retrograde injection of the smaller tortuous varicose veins anterior and external thigh and lower leg.

(4) Ligation, plus stripping, plus blunt dissection, plus retrograde injection of extensive tortuous groups of smaller size 1 and 2 veins.<sup>29,30</sup>

(5) Ligation, plus stripping, plus blunt dissection, and even the Linton operation.<sup>15</sup> At times an excision of the old cellulitis and ulcer area in the lower leg with skin grafting.

(6) Then a careful and complete follow up injection of every case at the office and then yearly thereafter.

(7) When edema has developed with secondary complications of cellulitis and ulcerations, external support must be used to control the swelling. The patient must learn "a new way of life."<sup>26</sup> This is best done with a 4-inch elastic bandage worn very firmly applied from just below the knee down to and about the ankle and foot. The tighter the bandage and the faster the patient walks, the better will be the circulation in the lower leg.

In conclusion this plea is made: A careful history should be taken as to the onset and development of the individual patient's disease. This should be followed with careful and detailed inspection and palpation examinations, combined with the use of the percussion pulse test, (P.P.T.) and the Trendelenburg test.

The treatment of the patient then should consist of an *adequate* surgical procedure, *individualized* for the given case, together with *adequate* observation and care of the patient the rest of his life.

## TREATMENT OF VARICOSE VEINS—MC PHEETERS

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## The Position of Radiology in Cardiovascular Diagnosis

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WITH the passage of time there are fewer and fewer persons who can relate personal acquaintance and memories with individuals whose work has been memorialized by professorships, scholarships or lectureships. To those so fortunate as to cherish personal memories of Russell Daniel Carman, this occasion becomes considerably more than a simple medical discourse for the remarkable personality of a truly great man reaches across nearly thirty years to pervade their thoughts. A driving, dynamic and brilliant physician, utterly devoted to radiology, it was Carman's great capacity for friendship which all who enjoyed it will remember most fondly.

As the veriest of neophytes in radiology, your speaker came under the spell of that freely extended, sincere and stimulating friendship during visits to the section on radiology at the Mayo Clinic and at medical meetings. Although those contacts were brief, 1923 to 1925, the memory of them has been vivid and deeply inspiring over the years. Carman quickly assumed, and correctly, that instruction was called for and upon every contact poured out by impromptu lecture, precept and vigorous example the clear cut essentials of honest and effective gastrointestinal radiology. The lessons he taught have proved to be increasingly valid for they were fundamental. American radiology has yet to produce an abler performer in this particular field, or a finer, more lovable character. It is particularly fitting that the Minnesota State Medical Association has paid lasting tribute to a former member whose professional accomplishments were of world-wide scope and importance. Let those who did not know him in life accept with confidence the validity of perpetuating his memory by dignifying lectures with

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his name, for he was truly dedicated to the finest traditions of the profession of medicine.

The position of radiology in cardiovascular diagnosis has been so thoroughly altered since 1926 that virtually none of its present features would be familiar to Carman. In his time it was necessary for radiologists to content themselves with measuring the size of the heart, observing its position, its shape and the pulsations of its borders, and noting the appearance of the great vessels. Carman, who was so adept at the exploration of the alimentary canal with suspended barium sulphate, would be intrigued with today's methods of studying the lumen of the circulatory system, and the interest in surgical techniques and surgical pathology which lured him to the operating table in following interesting radiologic findings would find ample opportunity for expansion to the cardiovascular field.

The story of the phenomenal change which has occurred in the radiologic approach to cardiovascular problems in this country differs sharply from the early history of radiology in America. News of Roentgen's discovery of x-rays, announced in December, 1895, spread throughout the civilized world with electric rapidity and in the United States patients were being subjected to x-ray diagnosis within a few weeks. The *American X-Ray Journal* was established in 1897, and in 1900 the Roentgen Society of the United States was organized with sixty-four charter members.

In 1924 Brooks, a surgeon, described a method of injecting sodium iodide into the femoral artery in order to produce radiologic images of the arterial distribution to the lower extremity. Few radiologists followed this lead. From 1927 throughout the early thirties, Forsmann in Germany, Egas Moniz and dos Santos and associates in Portugal brought forth daring techniques for the radiologic study of opacified blood in the heart, the arteries of the brain and the abdominal aorta and its

branches, but although these methods enjoyed clinical recognition in Europe and the Latin American countries, radiologists of the United States seemed reluctant to employ them.



Fig. 1. Complete occlusion of superior vena cava. Injection of opaque material by arm vein fails to result in filling of right atrium.

peripheral capillaries and the chambers of the heart, as well as the entire pulmonary circulation. Radiology has exploited a vast new jurisdiction to add voluminous and intimate knowledge concern-



Fig. 2. Lateral projection shows extensive filling of tortuous, distended azygous system. Systemic blood from upper extremities must use this route to reach the right heart by way of the inferior vena cava.

It was not until Robb and Steinberg described their technique and their initial experiences in 1939 that angiography began to flourish in America. An editorial in the *Journal of the American Medical Association* of February 15, 1896, offered this admonition regarding x-ray diagnosis: "Its surgical utility in certain ways has probably been sufficiently indicated by what has been already done, but enthusiasm as to its future should be tempered by a scientific spirit of moderation that proves all things before building its faith upon them." It would seem that this advice, so blithely ignored in 1896, had finally been taken to heart after a lapse of thirty years, for certainly the new cardiovascular techniques were most carefully scrutinized before they finally won widespread approval. Since 1940 the story has been quite different, for in fifteen years cardiovascular radiology, rejuvenated by the acquisition of new techniques, has swept forward with accelerating momentum to brilliant clinical accomplishments.

It is now thoroughly feasible and often dramatically helpful to visualize the venous system from distal extremities to the right atrium, the arterial stream bed from the origin of the aorta to the

ing the morphologic and the physiologic expressions of circulatory disorders. Six basic procedures are used by radiologists in close co-operation with their colleagues in cardiology and surgery: venography, splenoportography, cerebral angiography, retrograde aortography, abdominal aortography and angiocardiography.

#### Venography

Venography is accomplished by injecting opaque iodine-containing solutions into peripheral veins distal to the point of suspected abnormality. By this means obliterative lesions of many sorts can be demonstrated graphically, as well as the efficacy or incompetency of venous valves in extremity vessels. The procedure which is simple and safe, is often of great utility in identifying the nature of obscure mediastinal lesions (Figs. 1 and 2).

#### Splenoportography

Splenoportography is employed for the study of the splenic vein and the portal system. Opaque material is introduced by direct percutaneous needle puncture into the splenic pulp, following which several exposures of the upper abdomen are

## CARDIOVASCULAR DIAGNOSIS—HODGES

made at intervals of about one second. Under normal conditions the splenic vein fills rapidly, discharging freely into the portal vein and its intrahepatic subdivisions. Within a few seconds

through the normal liver route, and varices of the stomach and esophagus are dramatically shown. When abnormal masses occupy the liver they can be recognized as defects in the hepatogram (Figs.



Fig. 3. Early phase of splenoportogram shows absence of portal venous elements in entire upper portion of right lobe of liver.



Fig. 4. Later phase, same patient. Lower portion of liver now opacified; upper portion not opacified. At autopsy very extensive replacement of liver by metastatic carcinoma from primary sigmoid lesion resected five years previously.

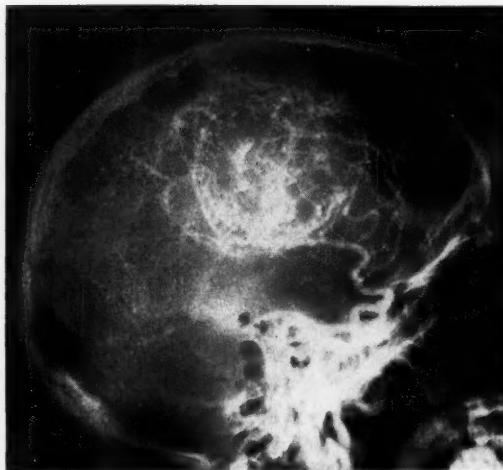


Fig. 5. Large parietal glioblastoma. Displacement of normal vessels. Extreme vascularity of the tumor itself is well shown.

the opaque blood fills liver capillaries to the extent that the entire organ becomes visibly opaque. The tributaries emptying into the splenic and portal veins do not fill. When portal hypertension exists, either intra- or extrahepatic in type, findings on x-ray are distinctive and of reliable diagnostic value. The tributary veins now serve as collateral escape routes for blood unable to pass

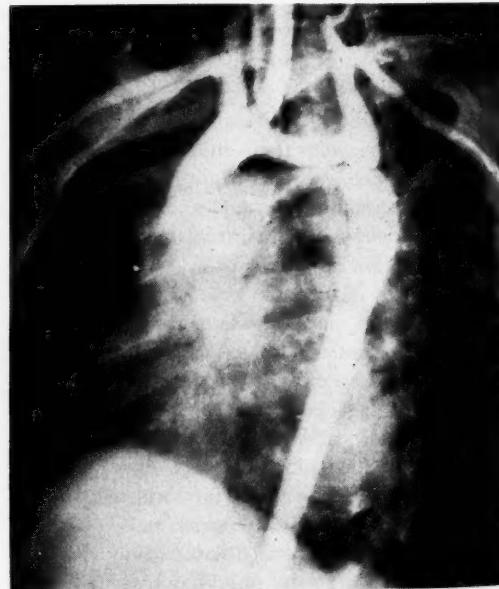


Fig. 6. Retrograde injection of subclavian artery outlining aortic arch and major branches. Mild degree of coarctation seen at origin of descending aorta and broad, patent ductus arteriosus.

3 and 4), and certain lesions of the pancreas can be apprehended by the visible alterations produced in the course and contour of the splenic vein.

**Cerebral Angiography**

Cerebral angiography, the radiologic recording of intracranial vessels, is accomplished by perfusing the internal carotid or the vertebral artery



Fig. 7. Selective filling of renal arterial system, right kidney. Needle inadvertently placed in renal artery instead of aorta.

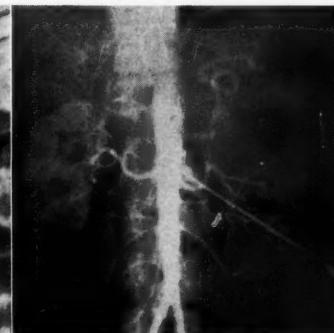


Fig. 8. Abdominal aortogram with normal fill of vessels on right and extensive obliteration of upper pole vessels on left. Large renal carcinoma upper pole left found at operation.

**Abdominal Aortography**

Dos Santos in Portugal was the first to opacify the abdominal aorta by direct percutaneous puncture below the diaphragm and above the renal



Fig. 9. Abdominal aortogram. Abrupt narrowing of lumen proximal to bifurcation representing profound atherosomatous disease which virtually obliterates lumen of iliac arteries leading to extensive development of collateral arterial channels.

with opaque material. Ominous as the procedure sounds when first contemplated, this procedure, introduced by Egas Moniz, is actually tolerated remarkably well, as well or better than ventriculography. It is profitable to make x-ray exposures during the venous as well as the arterial phases of cerebral circulation. Using this technique, lesions which involve vessels directly as well as those which distort and displace vessels can be detected and localized with remarkable ease and accuracy (Fig. 5). In the case of highly vascular tumors lingering opacity within the mass, known as "tumor stain," actually renders the tumor visible in its own right. To fully appreciate the status of cerebral circulation it is essential to prepare exposures in two planes, lateral and frontal.

**Retrograde Aortography**

To enhance the density of the thoracic aorta and its branches, the forceful injection of opaque material by way of the carotid or subclavian artery against aortic pressure is useful and practicable. This procedure is helpful in the demonstration of coarctation of the aorta, aneurysms of aorta or major branches, anomalous vessels which may be producing undesirable symptoms (Fig. 6) and for better understanding of the nature of pulmonary or mediastinal masses lying close to the aortic arch.

arteries. This procedure produces a wealth of radiographic evidence concerning intra-abdominal lesions. It is possible not only to recognize intracapsular renal masses but to differentiate in many instances between benign and malignant tumors on the basis of vascular pattern (Figs. 7 and 8). In Sweden clever techniques involving the placement of catheters introduced through the femoral artery directly into individual renal arteries have been successfully employed together with stereoscopic filming. It is possible by aortography to visualize the major divisions of the aorta almost at will, and to provide detailed information concerning obliterative lesions of the arteries which supply the lower extremities (Fig. 9). Such information, supplied to the surgeon, often leads to spectacular alleviation of serious inadequacies of circulation for the removal of obstructing atherosomatous masses or grafting operations can be planned and executed with great accuracy.

Again in Sweden, catheterization of the iliac artery by way of the femoral, using externally applied pressure to partially occlude the aorta and the femorals, is used to produce lingering opacification of the uterine artery on one or both sides. By this means Fernström is able to demonstrate placental sinuses in the early weeks of gestation. The method is particularly useful in establishing the diagnosis of tubal pregnancy and in localizing

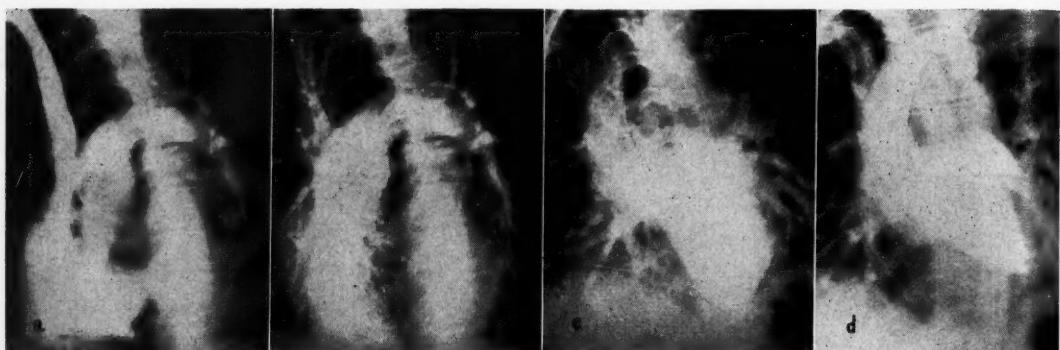


Fig. 10.—Venous angiogram.

(a) Fill of superior vena cava, right heart and pulmonary arteries. (b) One second later right ventricle in diastole shows location of interventricular septum with no filling on left.

(c) Four seconds later opacified blood returning by way of pulmonary veins outlines the left atrium and

ventricle. The aorta is beginning to fill. (d) The left ventricle is shown in systole one second later. The arch of the aorta with innominate, left common carotid but no left subclavian artery are clearly shown. Localized narrowing of the descending aorta (coarctation) can be recognized with post-stenotic dilatation.

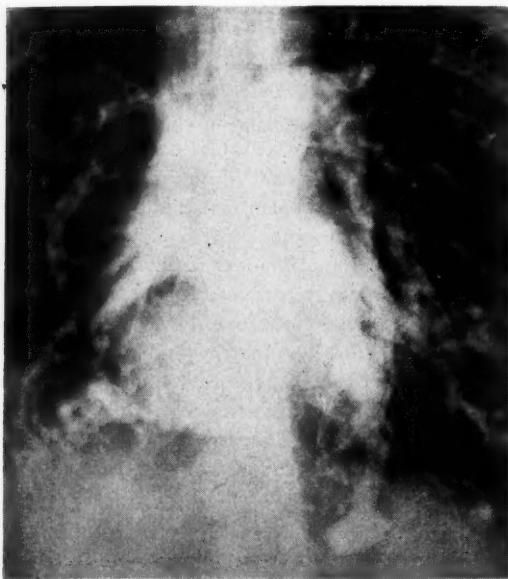


Fig. 11. Venous angiogram showing several pulmonary arteriovenous aneurysms. The largest communication is to be seen below the diaphragm contour on the left. Although the exposure was made only a few seconds after injection the left auricle and ventricle are filling prematurely as the result of these pulmonary shunts.

the position of the placenta in normal intrauterine pregnancy.

#### Angiocardiography

The radiologic procedure most extensively used in cardiovascular diagnosis is angiocardiography. This can be done by the venous route or by selec-

tive injection through catheters. When injection is made through the antecubital vein, all chambers and vessels from the vena cava to and including the aorta are successively opacified. Exposures at short time intervals serve to record important events of the central circulation (Fig. 10). A wide variety of congenital malformations yield distinctive radiologic evidence of their presence and character. The method is of great value in determining which patients with congenital heart disease may hope to benefit by surgical treatment. Not infrequently the surgeon can determine in advance what difficulties he may expect to encounter. Tetralogy of Fallot, transposition of great vessels, septal defects, infundibular and valvular pulmonic stenosis and patent ductus arteriosus lend themselves well to this method of exact diagnosis.

When properly employed in conjunction with accurate cardiac catheterization utilizing pressure determinations, oxygen concentrations, simultaneous electrocardiography and electrokymography, angiography reaches its peak of diagnostic accuracy. Specialized radiographic equipment is essential, preferably designed to produce extremely brief, closely spaced exposures in two planes simultaneously.

Angiocardiography is also useful over and beyond the study of central circulatory abnormalities. It is gratifying to be able to provide unmistakable

*(Continued on Page 300)*

# Chronic Pyuria

## Diagnostic and Therapeutic Measures

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THIS discussion is concerned, not with those mild acute infections of the urinary tract which disappear completely with sulfonamides and forced fluids, and never return, but rather with those which become chronic or recur repeatedly. Failure of simple therapy suggests that some factor is protecting the offending organism against the agents used, and demands a search for that factor before immunization against all the potent antibiotics has occurred. Only if this is done can crippling damage to the urinary tract be avoided in the majority of instances. The neglected patient may suffer from recurrent and disabling attacks of chills, fever, and vesical irritation, or may lose a kidney from pyonephrosis; hypertension may result from unilateral or bilateral cicatricial pyelonephritis; the latter may lead to death in uremia. Lithiasis may accompany a resistant infection with urea splitters, particularly if urinary stasis is present.

The steps in the necessary investigation are well known. In the female, the diagnosis of urinary infection cannot be made unless the urine is secured with a catheter; otherwise, a long and futile course of chemotherapy may be directed against a pyuria which is actually vaginal in origin. In the male, the starting point should be the two glass test. While this is indicative rather than conclusive, a cloudy first glass with the second one clear points directly to the urethra or prostate as the cause of the pyuria. The prostate should always be massaged and the freshly expressed fluid examined under a cover slip for pus. While it is not very often the source of a pronounced pyuria, the possibility should not be overlooked. If one finds areas of tender induration in the gland, the possibility of acute prostatitis must be considered; this is a fairly common cause of recurrent dysuria and increased frequency in the male. If the patient is examined between attacks, the gland may feel normal, so

that it may be necessary to have him return for a rectal examination during an acute attack in order to find the tender swelling which points to acute prostatitis as the cause of the symptoms.

The sediment of a centrifuged fresh specimen should be stained by Gram's method because the type of organism found (Gram negative rod or Gram positive coccus) is a rough guide to the selection of the proper antibiotic; and because complete absence of bacteria in the presence of pus suggests the possibility of amicrobic pyuria or of urinary tuberculosis. In this event, the urine should be cultured to make sure that the findings of the Gram stain are valid. One must remember that both the smear and the culture are unreliable if antibiotics have been given within the few days preceding the examination.

The next step is a plain roentgenogram of the urinary tract (KUB). One looks for stones, enlarged, shrunken, or absent renal shadows, for blurring of the margins of the psoas muscles (perinephritic abscess), and for lesions of bone.

The excretory urogram is invaluable as a rough screen for detecting abnormalities of the kidneys, ureters, and bladder. Properly made, it will yield a high proportion of definitive diagnoses in surgical diseases of the kidneys and ureters, but is of limited value in recognizing small lesions of the bladder because the relatively large amount of contrast medium which accumulates will mask them. The urogram is particularly useful in urinary infections for estimating the relative functional capacity of the two kidneys; for determining whether suspected calcifications are within the urinary tract; and for detecting stasis and anomalies, i.e., hydronephrosis, vesical diverticula, ureteral duplications, et cetera.

The retrograde cystogram and urethrogram (often combined with advantage) are helpful chiefly when findings up to this point are negative but leave one with the feeling that something has been missed. For example, a radiolucent vesical calculus may produce a filling defect in the cystogram, an unsuspected diverticulum may be seen,

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Presented at the annual meeting of the Northern Minnesota Medical Association, Bemidji, September, 1955.

## CHRONIC PYURIA—CREEVY

or a severe chronic prostatitis may appear as small irregular pockets protruding from the prostatic urethra.

No examination of the urinary tract is complete without a cystourethroscopic examination. Many blunders are due to failure to inspect the urethra, thus overlooking the typical fronds of a papillary urethritis in the female, and the dilated ducts with purulent secretion of a chronic prostatitis. Any proliferative lesion of the vesical or urethral mucosa must be subjected to biopsy, lest a small vesical neoplasm be overlooked or misinterpreted as inflammatory. Diverticula of the bladder too small to show in the cystogram (particularly one which is part of an excretory urogram) may be seen; specimens can be collected from each kidney to determine the source of a pyuria not otherwise localized; and retrograde pyelograms can be made when the urogram is unsatisfactory. One should not hesitate to repeat any part of the examination which leaves one with an unsatisfied feeling.

There are many factors which may prevent an infection of the urinary tract from responding to treatment. While these vary widely with age and sex, the principles involved in their recognition and treatment are the same. One should remember that stones and foreign bodies may fail to cause any pain whatever, and attract attention only because they incite and maintain infection. Even ureteral stones producing obstruction of considerable severity may be painless, and prostatic calculi rarely give rise to symptoms other than those of prostatitis. Large or branched renal stones are often painless. Vesical calculi and foreign bodies introduced during masturbation usually produce cystitis and pyuria without any symptoms suggestive of other lesions. For obvious reasons, children and adolescents who have inserted foreign materials into the bladder (chewing gum, paraffine, and candles are favorites) rarely admit it. These facts alone amply justify the employment of urography and cystoscopy in any stubborn infection. The latter is necessary because many calculi and most foreign bodies are radiolucent.

Congenital anomalies which lead to stasis of urine and so protect infecting organisms from therapeutic agents are numerous. Any hydronephrosis which develops gradually is likely to be painless except during bouts of acute infection; even then severe pain is rare. The commonest site of unilateral obstruction is the ureteropelvic junction due to congenital stricture, anomalous vessels, or

peripelvic fascia. In the urogram one sees hydronephrosis with a normal ureter. The horseshoe kidney, while uncommon, is often the site of obstruction of this type. Duplications of the renal pelvis and ureter are rather frequently associated with hydronephrosis, usually due to ureteral narrowing. While this may be found at the junction of the two ureters, it is usually located at the vesical end of one of them. This may result from stricture, from abnormal termination of the ureter in the urethra or introitus, or from a coincidental anomaly, ureterocele. Here the terminal ureter balloons into the bladder because of a stricture which involves only the mucosa of the ureteral orifice. This may obstruct one of a pair of normal ureters on the same side or involve a single ureter; it may overhang the vesical neck to such an extent as to cause obstruction there, so that the resulting dilatation of the upper urinary tract is bilateral.

Other congenital lesions causing urinary stasis include vesical diverticula and anomalies producing obstruction at the vesical neck. A vesical diverticulum may cause stasis by retaining urine within it, by narrowing an adjoining ureter, or by compressing the prostatic urethra. Other disorders responsible for obstruction at the outlet of the bladder include flaps of mucosa overhanging the internal urinary meatus, congenital valves of the prostatic urethra, hypertrophy of the verumontanum, hypertrophy of the internal sphincter, and congenital absence of the abdominal muscles. Incomplete emptying of the bladders of infants and young children may also be due to defects of innervation of the bladder and to urethral strictures and diverticula. Tragically enough, these lesions are rarely recognized until the upper tract has been damaged beyond repair, simply because their possibility is not usually considered. This situation would be much improved if physicians who take care of children would form the habit of watching those with pyuria micturate, and of checking the residual urine in every case of chronic pyuria. The poor stream is an obvious sign of obstruction or a weak detrusor. Only thus can these serious disorders be discovered in time to prevent hopeless deterioration of the kidneys.

Acquired diseases which cause stasis of urine are more frequent in older people. Commonest is prostatism, whether benign hypertrophy, carcinoma, or fibrosis. These foster infection only insofar as they prevent emptying of the bladder or lead to the formation of stones. The former situation is

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recognized readily by measuring the residual urine, and the latter by roentgenograms of the bladder and by cystoscopic examination. Next in frequency are probably urethral strictures. It is unfortunate that the striking reduction in the frequency of post-gonorrhreal strictures which has accompanied the use of penicillin should be to some extent neutralized by the increase of the traumatic variety due to accidents with the automobile and airplane, and in industry. While urethral stenosis predisposes to infection by producing residual urine, the increased pressure required to force urine through the narrow area may dilate the prostatic ducts; if infection is present, these dilated ducts may become small abscesses; such lesions strongly resist medical treatment. They are most easily identified by urethrography.

Diverticula of the urethra and of the prostate may be congenital or may result from epithelialization of abscess cavities. Their presence leads to stasis within their lumina, so that infection is fostered, and stones may form as water is absorbed, leaving urinary salts behind. Such diverticula are never discovered unless the physician remembers to look for them. They are best demonstrated with the urethrogram.

Localized proliferative or fibrotic inflammatory lesions are fairly common sources of persistent or recurrent infections. Most frequent are the papillary or polypoid masses which develop at the internal urinary meatus in the female. They probably result from a combination of circulatory disturbance incident both to relaxation of the pelvic floor and to postpartum scarring, with bacterial invasion. During an acute attack these proliferative structures swell, giving rise to a desire to micturate because of their presence within the first portion of the urethra. Since they cannot be expelled, the desire persists or soon recurs because of the feeling that there is something in the urethra. Acute attacks are associated with pyuria and bacteriuria, and are usually mistaken for "cystitis." The episodes subside with antibiotics, but the papillary structures remain as areas of lessened resistance, and almost invariably give rise to subsequent attacks. Some will disappear with weekly dilatations of the urethra to 30 or 35 French, followed by the topical application of  $\frac{1}{2}$  to 1 per cent silver nitrate; many will require electrocoagulation through the urethroscope.

Cicatricial urethritis (simple fibrosis of the urethra) may cause contracture with obstruction

to urination and, consequently, residual urine, and so lead to recurrent infection. For this reason, every woman with chronic or recurrent urinary infection should have the residual urine measured. Weekly dilatations of the urethra after the active infection has subsided will often so improve emptying of the bladder that the pyuria disappears. Failure of the dilatations to bring relief suggests obstruction at the vesical neck, diverticula (quite rare in the female) or neurogenic dysfunction.

Cystic lesions of the vesical mucosa (cystitis cystica) are usually the result rather than the cause of recurrent infections. Occasionally they may become so numerous and so large that it is desirable to destroy them by electrocoagulation.

Recurrent pyelonephritis may cause so much scarring as to impair local blood supply, and so leave the kidney vulnerable to future attacks. Such lesions cannot, of course, be cured. Occasionally they may cause hypertension, which may disappear after nephrectomy if the renal disease is unilateral. When it is bilateral, we must be content with treating the individual attack with antibiotics, not forgetting to explain to the patient the reasons for our inability to prevent recurrences.

One must always remember renal tuberculosis when dealing with unresponsive infections. While pyogenic organisms are not ordinarily found in the urine in tuberculosis (to the extent that a sterile urine culture in the presence of pyuria always brings up the question of tuberculosis), secondary infection may occur even with chills and fever, and so delay recognition of the underlying disease. This is one of the cogent reasons for making urographic and cystoscopic studies in every resistant infection. Careful search for the tubercle bacilli by means of the acid fast stain, guinea pig inoculation and culture will invariably reveal the organism if one persists long enough, but pyelograms should be made before delay has permitted the renal tuberculosis to progress or allowed secondary vesical tuberculosis to cause fibrosis of the bladder.

One cannot honestly say that an infection persists or recurs due solely to bacterial resistance to antibiotics and urinary antiseptics, until careful urography and cystoscopy have demonstrated the absence of the disorders already described, because almost any pyogenic organisms can acquire resistance when attempts are made to eradicate it with antibiotics without correction of the predisposing lesion. Therefore, one should not take the results

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of sensitivity tests indicating resistance as final without careful and perhaps repeated review of the whole urinary tract. The strains of bacteria most often resistant to drugs are *Bacillus proteus*, *Aerobacter aerogenes*, and *Pseudomonas aeruginosa*, although almost any pathogen may become resistant in some circumstances. Sensitivity tests make a good starting point with antibiotic resistant bacteria. While scientific studies require the use of the serial tube dilution method, this is not necessary for ordinary clinical purposes. One can use Petri dishes containing blood agar, and divide the under surface into labelled quadrants with a wax pencil. Fresh urine collected with sterile precautions is smeared on the agar. "Difco discs," each saturated with an antibiotic to be studied, are dropped onto the agar, taking care that each one corresponds to a labelled segment. Organisms can be classified as resistant if, after twenty-four hours in the incubator, they have grown right up to the edge of the disc. They may be classified as slightly, moderately, or quite sensitive according to the width of any clear zones of inhibition around the discs. While correlation will be far from perfect, the results are useful clinically.

In general, *B. proteus* is unlikely to respond to any one antibiotic, but many strains will succumb to a combination of two, or to an antibiotic combined with an urinary antiseptic. Combinations likely to be effective include penicillin and streptomycin, Chloromycetin and Gantrisin, and Furadantin and Gantrisin. The first pair has, of course, to be injected intramuscularly. Relatively large doses should be used, say 500,000 units of penicillin and 0.25 gram of streptomycin every four hours. Because of the tendency of the latter to provoke both reactions and bacterial resistance (or even dependence), the course of treatment should be short. More convenient to use and just as likely to be effective are Chloromycetin 0.5 and Gantrisin 2 grams four times daily; at the end of a week the dose is reduced to one half; after another week it is cut to one quarter of the original level, being stopped at the end of the third week. However, if the urine is not grossly clear at the end of the first week, there is no point in continuing this regimen. The third alternative consists of Furadantin 7 milligrams per kilogram of body weight per day divided into four equal doses, and Gantrisin 2 grams four times daily. The former should never be taken on an empty stomach; nausea from the first few doses may disappear if administration

is continued. The same practice of halving the dose at the end of the first week; and of quartering it at the end of the second is followed; it is stopped at the end of the first week if the urine has not cleared. The object of the continuing the regimen for three weeks is to kill all of the organisms if possible, since there seems but little doubt that many recurrences are due to stopping treatment as soon as the urine clears; the ability of the organism to grow may be only temporarily impaired at this point.

*Pseudomonas aeruginosa* is usually insensitive to all of the antibiotics ordinarily used, although a few strains may succumb to one of the tetracyclines or to calcium mandelate in adequate doses (3 grams four times daily with the fluid intake limited to 1200 cubic centimeters). While infections with these organisms are rarely serious, an occasional strain may behave in a highly virulent fashion. Here one uses Aerosporin (polymyxin B). Because of its neuro- and nephrotoxic properties, and because it has to be given parenterally, the patient should be hospitalized. The drug is mixed with 1 per cent procaine and injected intramuscularly. Even then, it may cause pain at the site of injection. The largest safe dose is probably 2.5 milligrams per kilogram per day in four equally divided amounts. If treatment is continued for more than a few days, the renal function should be checked every forty-eight to seventy-two hours while keeping alert for signs of damage to the central nervous system.

*Aerobacter aerogenes* is a close relative of *E. coli*, but is far more resistant to antibiotics than the latter. Agents most likely to be effective are the tetracyclines, chloromycetin, and sulfonamides, in that order. Streptomycin may be successful; obviously the sensitivity tests are useful here, as well as in resistant strains of other species.

Staphylococci which are resistant to penicillin may succumb to erythromycin, 400 milligrams four times daily. Formerly, the intravenous injection of neoarsphenamine or mapharsen in small, frequent doses could be counted upon to cure a few stubborn chronic infections, but the success of penicillin in the treatment of syphilis has resulted in the virtual disappearance of the arsenicals from the market. This is particularly regrettable in the admittedly rare amicrobic pyuria, which was wont to vanish like magic following the use of these agents.

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MINNESOTA MEDICINE

# Roentgenographic Findings in Respiratory Problems of Infants

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THE acute respiratory problem of the neonatal period is one which often requires rapid diagnosis to insure proper therapy. The gradually developing lesions can be handled more leisurely; nevertheless, both the acute and chronic lesions have roentgen findings which will frequently aid the clinician in diagnosing the case. The clinical

free pleural space, mediastinum, and subcutaneous tissues<sup>1</sup> are the two routes for the passage of air (Fig. 1).

Aeration and expansion of the lungs are gradual processes especially in premature infants. When the process of inflation fails to occur, which is thought to be on an obstructive basis by some,<sup>2</sup>

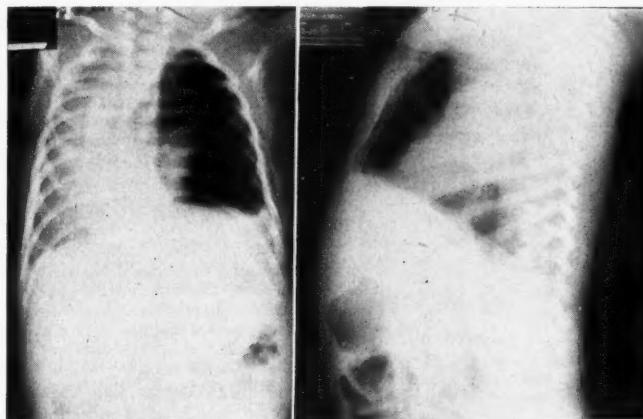


Fig. 1. (Case 1) A five-day-old white male child who had acute respiratory distress from birth. Diagnosis: crush type hydropneumothorax with shift of the heart and mediastinum.

and roentgen findings together will be of more value than either one alone. These entities will be discussed in the order in which they might be encountered during neonatal and early childhood periods.

Birth trauma frequently results in an asymptomatic pneumothorax, especially in the premature infant. Only those cases which have marked collapse of the lung with resultant respiratory distress are examined radiographically. Fractured ribs are rarely found. The development of the pneumothorax is usually due to a crush injury which is the same in infants and adults. Simple alveolar rupture into the pleural space or retrograde passage along the perivascular tree to the hilar root,

various degrees of distress, cyanosis, and even death will follow.

Farber and Wilson<sup>3,4</sup> have shown that there is physiologic atelectasis of varying magnitude during the first four days of life in full-term infants who have no respiratory distress. In contrast, the premature infants' lungs may not fully expand for from four to six weeks. They feel that cohesive forces, faulty or ineffective function of the respiratory centers and an underdeveloped thoracic cage are more important in the failure of expansion in primary atelectasis than is true obstruction, which has been postulated as the cause of fetal atelectasis.

A problem which is particularly interesting to us at the University of Minnesota Hospitals is that of hyaline membrane disease. It is not found in stillborns or within the first hour of life.

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## RESPIRATORY PROBLEMS IN INFANTS—FEINBERG

Lungs are the poorest developed organ at birth and have to take on an entirely new function at birth.<sup>5</sup> At the four- to five-month stage of gestation, gas exchange would be impossible. The respiratory tree is lined by cuboidal cells which sepa-

The exact etiology is unknown. Aspiration of amniotic fluid has been considered as the cause for many years.<sup>6,7</sup> This view has been challenged,<sup>8-11</sup> and the role of capillary exudation and other biochemical factors must be considered.

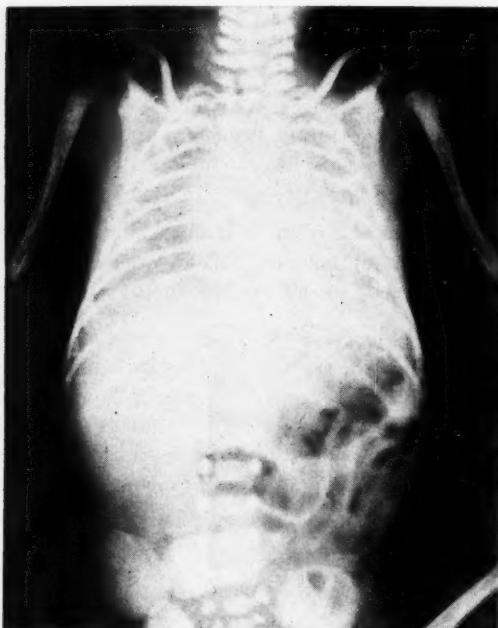


Fig. 2. (Case 2) A premature with respiratory distress at eight hours at which time retraction developed. Radiographs and thoracotomy showed atelectatic changes compatible with the diagnosis of hyaline membrane disease. Autopsy showed secondary atelectasis with hyaline membrane lining of many alveoli.

rate the blood vessels from the potential air space. If the infant were born at this stage, the cuboidal cells would prevent passage of air. At the fifth month, capillary buds begin to push the epithelium aside and are exposed to potential air spaces. By the seventh month, sufficient capillaries are exposed to sustain life. Anything which interferes with this process is a hazard to life, which accounts for more difficulty in prematures.

In hyaline membrane disease, the infant will usually breathe spontaneously. Later, the respirations become labored and are accompanied by retraction of the thoracic wall. Occasionally there is recovery, more often death occurs in forty-eight hours. Grossly the lungs are dark red and firm and sink in water. Capillary engorgement is a microscopic finding. The major alveoli and respiratory ducts are collapsed. The few remaining air spaces are lined with a hyaline membrane.

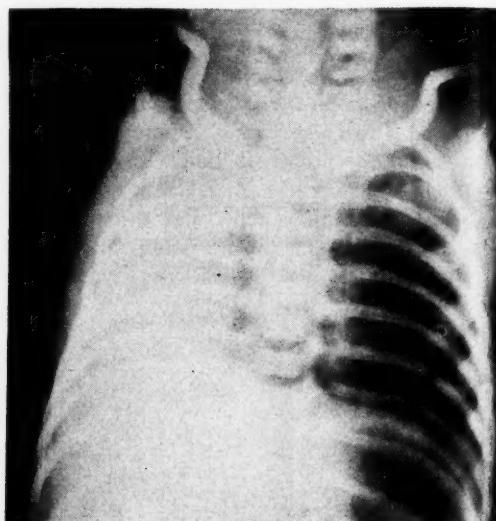


Fig. 3. (Case 3) A one-day-old female child who had a tracheoesophageal fistula. There was also respiratory distress thought to be due to aspiration pneumonitis and/or atelectasis. Chest study showed shift of the heart and mediastinum to the right with compensatory emphysema on the left. A differentiation between agenesis and atelectasis had to be made. Autopsy findings showed the fistula, agenesis of the lung, and aspiration pneumonitis.

The roentgen findings have been described<sup>12-14</sup> as ranging from generalized granularity or nodularity, to complete atelectasis with or without peripheral emphysema (Fig. 2). At present, we are attempting a study to follow the roentgen evolution of the disease more closely.

Not all respiratory problems of infants are due to bizarre causes. Most cases involve simple post-partum pneumonitis<sup>15</sup> or aspiration. One must also consider the possibility of an underlying anomaly such as a tracheo-esophageal fistula with secondary aspiration, atelectasis, or both. Likewise, pulmonary anomalies, such as agenesis of the lungs, may be misinterpreted as an acquired disease (Fig. 3). Bronchography and planigraphy are necessary to confirm the diagnosis.<sup>16</sup> Infantile myasthenia gravis may show swallowing problems with secondary aspiration and pneumonia. We must also acknowledge the congenital diaphragmatic hernia as an occasional cause of neonatal respiratory distress as

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a result of compression of lung parenchyma by the intrathoracic location of abdominal viscera.

As described by Henry<sup>17</sup> and Van Epps,<sup>18</sup> hypertrophic lobar emphysema is an acute respiratory problem found primarily in the new born. Dyspnea

The decision to excise the lobe depends on the degree of hypoxia and respiratory embarrassment.

Cystic disease, either congenital or acquired, must be differentiated from lobar emphysema. In the obstructive cyst, tension pneumothorax must

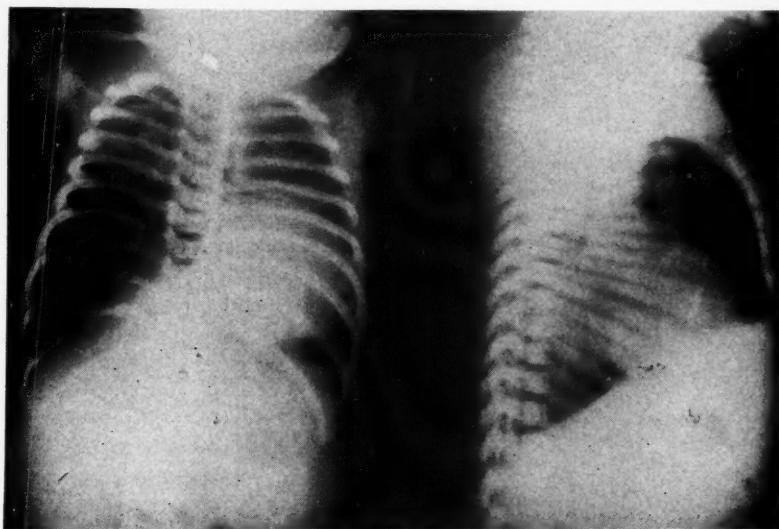


Fig. 4. (Case 4) A seven-day-old female child who had marked respiratory distress and cyanosis from the third day. X-ray showed mid lung field emphysema and compression atelectasis of the right upper and lower lobes. Impression: hypertrophic lobar emphysema. (Surgery—lobectomy confirmed the diagnosis.)

Figure 4 is presented through the courtesy of Drs. Roger Lienke and E. F. Van Epps, University of Iowa, and by permission of the publishers of *The American Journal of Roentgenology, Radium Therapy, and Nuclear Medicine*.

and cyanosis often develop within a few days of birth. No infectious disease is present (Fig. 4). Various causes for the finding have been listed, such as, redundant bronchial mucosa acting as a check valve, abnormal cartilaginous ring development, aberrant vessel compression, and a stenosed bronchus. Some cases have no discernible bronchial lesions. The lungs are overdistended and apparently quite pink. They remain distended after removal, suggestive of an elastic tissue abnormality.

The course is one of a normal infant who becomes dyspneic with or without cyanosis shortly after birth. On examination they have classical emphysematous findings with no evidence for inflammation. The signs and symptoms are more alarming than in cases of true cysts. Radiologic findings are those of localized lobar distribution of emphysema, manifested by a large translucent zone confined to a lobe with adjacent compression, mediastinal shift, and compensatory herniation. The septa of cystic disease are absent. Johns<sup>19</sup> expressed the opinion that all non treated cases died. Caffey<sup>20,21</sup> described spontaneous regressions.

be excluded.<sup>16</sup> Whether closed or open, these conditions are not recognized early unless they become infected or compress much lung parenchyma. The closed cysts may be fluid filled and as a result are not radiographically translucent. The air filled pneumatocele, by contrast, will cause various degrees of translucent replacement and displacement of lung parenchyma, sometimes simulating a tension pneumothorax with shift of the heart and mediastinum to the opposite side (Fig. 5). There may be associated circulatory compression.<sup>22</sup> Septa are a diagnostic feature in this entity. Post inflammatory pseudocysts can produce similar clinical findings, but they do not involve alveoli or bronchi<sup>23</sup> (Fig. 6).

The histological differentiation between congenital and acquired cysts is difficult. Condon<sup>24</sup> has shown that respiratory epithelium responds rapidly to injury and that epithelial linings *per se* are no index to the congenital nature of the cyst.

Methemoglobinemia<sup>25</sup> due to ingestion or absorption of various chemicals such as nitrates, ace-

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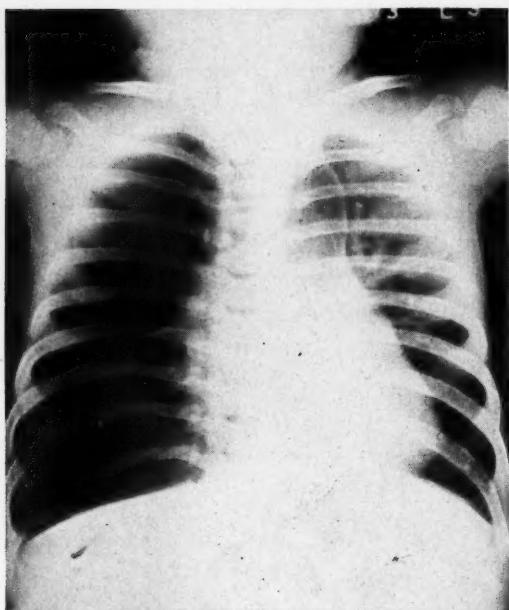


Fig. 5. (Case 5) A two and a half year old boy who tired easily but a lesion was not discovered until nine months of age when an x-ray was taken. There was marked lung field translucency with compression of the heart and mediastinum to the left. Septa were present. Diagnosis: cyst. Surgical and pathologic diagnosis: congenital cysts.

tanilid, potassium chlorate, nitrobenzol, etc., results in the formation of an oxyhemoglobin to which the oxygen is firmly bound and which does not function in respiratory exchange. As a result, cyanosis is the presenting finding with dyspnea. Congenital heart disease is often suspected. We recently had a patient who was clinically suspected to be an example of tetralogy of Fallot. Radiographically there was questionable increase in lung field translucency. The cyanosis cleared after one day of hospitalization in the Heart Hospital, and it was found to be due to a high concentration of nitrates in well water. The outcome of this case was fortunate, but the disease can be fatal if not recognized. Actually there are no diagnostic roentgen findings.

Arteriovenous aneurysms<sup>26</sup> are another cause for cyanosis in the infant even though the lesions are usually discovered later in life (Fig. 7). If the shunt is large enough, cyanosis can be recognized early. The usual later findings are clubbing of the fingers, exertional dyspnea, cardiac strain, and secondary polycythemia. A bruit is sometimes heard over the area. Due to shunting of the blood through the malformation, there is often a decreased parenchymal vascular pattern. In the area of the lesion, a serpiginous shadow radiating from the hilum is the expected finding. Often, these are



Fig. 6. (Case 6) A one-month-old boy who developed aspiration pneumonia after a herniorraphy on the first day of life. This was followed by effusion and post aspiration empyema. The empyema loculated anteriorly and was followed by anterior cystic lesions of the interstitial, extra-alveolar pseudocyst variety.

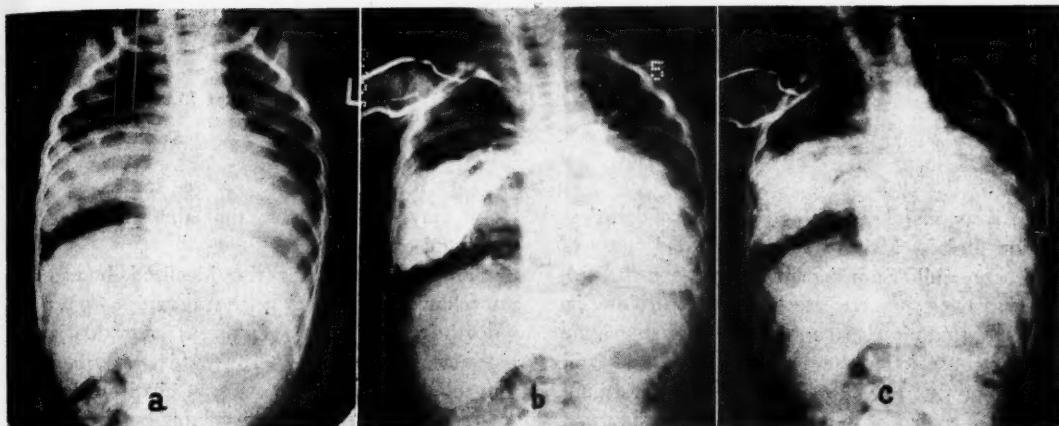


Fig. 7. (Case 7) (a) Male child born in a tuberculosis sanitarium was not seen by mother until two months, and she wasn't aware of cyanosis until nine months. The right middle lobar patchy density had a central cluster of sharply circumscribed densities suspected of being an anteriovenous aneurysm. No bruit was heard. (b and c) Angiogram confirmed the diagnosis. Surgery confirmed the finding but the child died of cardiac decompensation and edema.

multiple with smaller defects that do not become apparent until the obvious lesion has been removed.

### Summary

Many pulmonary problems which present with respiratory distress and cyanosis in the neonatal period and infancy have been discussed and their roentgen manifestations demonstrated. The combination of clinical, radiologic, and laboratory studies will often lead to the correct diagnosis and treatment.

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# Electrolyte Disturbances in Dehydration

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THE successful and definitive repair of dehydration and its accompanying abnormal states of acid-base equilibrium depends more upon the kidney and the cybernetic mechanisms controlling its function than it does upon the acumen of the clinician in selecting the type and quantity of fluid to be administered. The history of parenteral fluid therapy is replete with eponymic solutions of great diversity and complexity, all of which have been used with surprising success to restore the volume and composition of the body fluids. As the sophistication of technique progressed, the view of the underlying mechanisms upon which rational and intelligent therapy could be carried out was lost. Talbot, Crawford and Butler<sup>1</sup> have rendered the good service of reminding us of the items just noted and have pointed out the corollary that, if the body is offered quantities of water and ions within the ability of the kidney to conserve or reject these substances, a proper sorting out will occur and normality will be quickly restored. One major difficulty seems to fall in the way of giving the kidney all of the responsibility for therapy. At times it may not be working properly, either for reasons of its own or because its communication system has gone awry. In about eighty out of a 100 instances, routinized therapy for dehydration and its associated ionic disturbances will work admirably and produce the desired results. In a few of the remaining twenty instances, no therapy will be successful as the physiologic pathology will have gone so far as to be irreversible. In other instances the deficits are bizarre or the homeostatic links required for adequate renal control are broken. Therapy in this same group, if it is to be successful, must be based on understanding of mechanisms. The use of formulas and tables will fail. Clinical observation and reflection will often serve to identify the patient in whom normal homeostatic mechanisms will fail to aid therapy. At times failure to respond to standardized forms of ther-

apy may give the clue that the situation is an unusual one.

Figure 1 indicates the idealized homeostatic mechanisms by which the organism postpones death from circulatory failure as water deprivation occurs and progresses. It should always be borne in mind that the basic cause of death in dehydration is reduction of blood volume below a critical point where circulation fails. While the diagram is constructed to indicate the events occurring in pure water deficit (man in the desert), it forms the basis for critical thinking about what happens to the patient who, in addition to being unable to take or retain water by natural means, suffers from deficit of renal, adrenal or pituitary function or from wasting of body electrolyte.

The diagram is best understood by following down the two sides simultaneously until the final credit for the whole transaction has run out, and the debit is ready for therapy. Once water intake stops, from whatever abnormal cause, deficit immediately results because of the continuous obligatory loss of water from the skin, lungs and kidney. The process is analogous to the boiling away of water from a pot on the stove. Loss of water can only be stopped by putting out the fire. As water thus leaves the body, the volume of extracellular fluid (ECF) is first to decrease. Simultaneously, as indicated on the right side of the diagram, the factors of infection, trauma, pain and fasting lead to increased ACTH production by the pituitary. The increased ACTH results in production of the catabolic adrenal hormone hydrocortisone. Decreased ECF (or blood volume) appears to directly stimulate the production of the sodium retaining adrenal hormone aldosterone. This sequence is indicated by the arrow across the top of the diagram. The question mark breaking the arrow indicates lack of complete experimental proof of the sequence. Decreased body sodium or increased body potassium may also be factors. Returning to the left side, we see that, as volume falls, the osmotically active solute, mainly sodium and chloride, of the ECF tend to rise. This increase in concentration is accentuated

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by the renal retention of sodium secondary to the effect of aldosterone on the renal tubule. The rise in concentration of sodium in the plasma leads to secretion of antidiuretic hormone (ADH) by the posterior pituitary as has been so beautifully shown by Verney.<sup>2</sup> In turn, ADH leads to maximal water reabsorption by the kidney as indicated by maximum specific gravity of the urine. A second consequence of the increased sodium concentration is the transfer of intracellular water to the ECF in response to the now imbalanced osmotic pressure. Transfer of water is further aided by the catabolic effects of hydrocortisone secreted in response to the stressful stimuli. Under such hormonal actions the individual, in effect, "self-feeds" himself from his own body substance. Potassium and nitrogen are lost from the cell and water and calories become available. Aldosterone again steps into the homeostatic chain by facilitating the renal excretion of potassium and preventing a lethal rise of this ion in ECF.

The events just described allow the ever-increasing deficit of ECF to be shared by the relatively much greater volume of intracellular water. Furthermore, as long as homeostasis succeeds, little change in electrolyte concentrations will occur. Sodium, potassium and nitrogen (urea) concentrations will be normal. As Gamble<sup>3</sup> has pointed out, these mechanisms greatly multiply survival time under water deprivation. Without these mechanisms for spreading water deficit over all the body water, the circulating fluid volume would be quickly wiped out.

Changes in the plasma concentration of sodium, potassium and urea should indicate to the clinician that the ultimate strain has been placed on the mechanism or that somewhere the process is not working properly. If the adjustments have been perfect, the only abnormality will be reduction in volume of the body fluids and net loss of extra-and intracellular electrolyte. In very general terms we know that when 10% of the body weight has been lost as water, the final strain becomes evident in the form of peripheral circulatory failure and beginning distortion of the ECF ionic pattern.

Modern concepts of fluid therapy are designed to reverse and take advantage of the sequences just described. The initial attack is made upon restoration of circulating volume by means of various facsimiles of ECF varying in sophistication from "normal" saline to lactated Ringers solu-

tion. Simultaneously, or very closely thereafter, provision must be made for the obligatory expenditure of water from skin and lungs and for water to relieve the kidney of the burden imposed upon it by ADH and the need for excretion of products of cell breakdown. This combined operation is accomplished by the administration of solutions containing one-third to one-half the concentration of electrolyte contained in so-called "normal" saline. Reflection about the sequences shown in Figure 1 will indicate that the practice of infusing saline solution or saline in glucose alone in dehydration does little but accentuate the disturbance. The ill effects of fluid volume deficit may be temporarily overcome but any gain is quickly offset by the subsequent accentuation of abnormal plasma electrolyte pattern. Success in treating dehydration with isotonic saline in the past indicated that the extraordinary fortitude of the kidney coupled with the fact that restoration of circulating volume revived the patient sufficiently so that he could drink naturally occurring hypotonic fluids. With present-day knowledge it is better not to gamble on these possibilities.

Once the threat or actuality of circulatory failure has been removed and the kidney "primed," the beginning of repair of the intracellular fluid may be carried out by provision of potassium in the administered fluids. If potassium is not provided, sodium ion will take its place in intracellular fluid. This latter occurrence, if of the usual limited degree, seems of no clinical significance but if extensive, produces clinical symptoms.<sup>4,5</sup> Provision of potassium in parenteral fluids is generally only necessary when a prolonged period (two days or longer) of parenteral fluid therapy becomes necessary.

In a certain small number of patients the homeostatic mechanisms will have failed and cannot be depended upon to aid in therapy. Clinical observation and intelligent use of the laboratory will serve to identify these patients and to guide therapy. It is obvious that any break in the mechanisms shown in Figure 1 will prejudice operation of the whole system. The clinically most common examples are abnormal extrarenal loss of sodium salts or failure of the kidney to conserve them. Loss of sodium through diarrhea, vomiting suction drainage, sweating, diuresis or failure of the renal sodium conserving mechanisms allows ECF sodium concentration to fall as water deficit increases. As a consequence, ADH secretion fails to

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occur as does osmotic transfer of water from intracellular fluid. The brunt of dehydration falls on the ECF alone, and the critical point in reduction of circulating volume is reached in hours rather

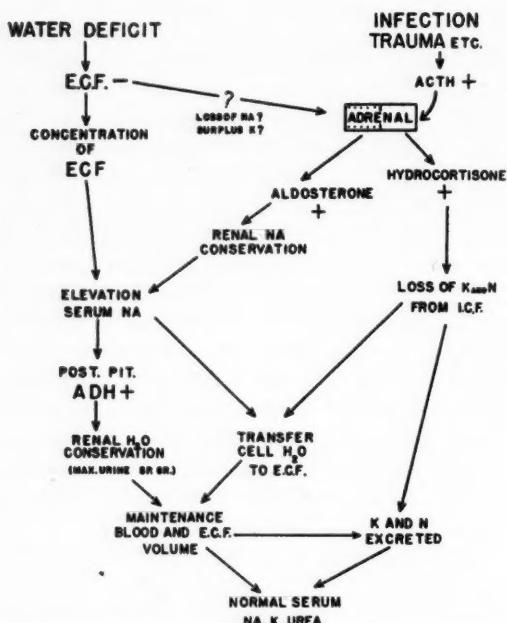


Fig. 1. Schematic presentation of the homeostatic mechanisms acting during water deficit. + or — signs indicate that a function is increased or decreased. E.C.F., extracellular fluid; ADH, antidiuretic hormone; I.C.F., intracellular fluid. For explanation see text.

than days. The patient with adrenal insufficiency is the rare but pure prototype of such a failure of homeostasis. So-called "base-losing nephritis" and instances of suction drainage without adequate electrolyte replacement are more common examples. Patients with salt depletion in excess of water can often be clinically identified. Signs of peripheral circulatory failure are profound, blood pressure is low and pulse rate high, skin turgor is decreased to an exaggerated degree, and the traditional Hippocratic facies are present. Physical examination shows a generalized muscular hypotonia. Unless the condition is far advanced, the sensorium is clear and the psyche seems dominated by alternate lassitude and anxiety. The plasma sodium concentration is low and potassium and urea high. The routine administration of hypotonic potassium-containing solutions to such patients accentuates the clinical and chemical disturbances and results in deterioration of the situation. Such

patients are, in effect, suffering from water intoxication. Their initial therapy must be with isotonic solutions of electrolyte, not hypotonic. In the severely ill patient with dehydration treated pragmatically with hypotonic solutions, careful watch should be kept in the six to eight hours following initiation of intravenous fluid therapy. If the typical favorable response does not follow in this period, the suspicion of hypotonic dehydration should be raised, and therapy should be changed to that with isotonic solutions of electrolyte. Correlation of the clinical state with measurement of the serum sodium or chloride concentration is invaluable at this point.

In a goodly number of instances of dehydration, particularly in infancy, the homeostatic mechanisms seem to have over-reacted to the stimulus of dehydration. Sodium retention by the kidney has been intense, and the expenditure of water without salt from the skin, lungs and intestinal tract unduly high. The situation is crudely analogous to that of a beaker of saline solution boiled to near dryness over a flame. The concentrations of sodium and chloride in the plasma are far above normal. The dehydration may be termed "hypertonic." Again, good clinical observation will identify many of these infants. Their appearance is nearly the opposite of those with low sodium concentrations. Signs of circulatory failure are minimal; skin turgor is deceptively normal, and the eyeballs are not sunken. Unlike the patient with salt depletion and dehydration, they are out of contact with the environment. Their extremities and back are stiff or even rigid, and the examiner gains the impression that they are close to the convulsive point. Often this is true. In infants the initial mistaken diagnosis of meningitis is often made, and the water deficit ignored. If sought, laboratory signs of central nervous system damage are usually found. Spinal fluid proteins are nearly always increased and the EEG abnormal. Figure 2 shows the initial EEG tracing in an infant whose serum sodium concentration reached the rather astounding value of 200 mEq./l. as a result of dehydration secondary to gastroenteritis. Eight days later, after appropriate therapy, the tracing is normal. Usually the lesions seem functional and reversible, although in a few instances the presumed chemical trauma seems to be permanent. Abnormally high concentrations of serum sodium are frequently encountered in patients with prior central nervous system disease.<sup>6</sup> Time does not

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allow complete discussion of the pathologic physiology of this type of dehydration. This can be found elsewhere.<sup>7,8,9</sup> Suffice it to say that the brunt of the water deficit has been borne by the intracellular rather than the extracellular fluid. Extracellular volume seems to be relatively intact. Loss of potassium does not seem to occur. Ionic concentrations within cells, like extracellular concentrations, are high.

The question may be asked as to the relative frequency of abnormal states of ionic concentration in dehydration. In a two-year period at Babies and Children's Hospital of Cleveland, 220 out of 2600 admissions were instigated with dehydration as an urgent diagnosis. In seventy-seven instances measurements were made of the serum sodium concentration before therapy was initiated. Seventy per cent of the seventy-seven were in the normal range (130 to 150 mEq./l.); 20 per cent of the concentrations were over 150 mEq./l., and 10 per cent under 130 mEq./l. Presumably the majority group had come along the path of dehydration with normal homeostatic mechanisms in operation. In the majority group a single parenteral solution with an electrolyte concentration of 50 to 70 mEq./l. would serve for ideal repair. In the remaining patients individualized therapy based on clinical observation supported, if possible, by laboratory measurements would be essential for effective therapy.

Before concluding, note should be taken of the acid-base disturbances that inevitably accompany dehydration. They are the result of differential losses of cation (base) and anion (acid) in intestinal fluids and urine coupled with the increased requirement for anion excretion occasioned by the destruction of tissue outlined above. Correction of these disturbances depends upon restoration of circulatory efficiency and the consequent return of renal function. Correction of the acidosis by infusion of alkaline solutions should be a strictly secondary consideration in planning therapy. The history of parenteral fluid therapy supports this contention. The earliest attempts at the beginning of this century to understand and study the pathologic physiology of diarrheal disease centered about the finding of acidosis in the blood of these patients. At that time little understanding existed concerning the volume and composition of the body fluid compartments and their critical relationship to circulatory and renal function. Therapeutic efforts centered around the administration

of strongly alkaline solutions in small volume. Such procedures increased mortality and were soon abandoned. Some years later Hartman pointed out the therapeutic efficacy of combined proce-



Fig. 2. Electroencephalogram of a 6 months' old child with severe hypertonic dehydration. The tracing at the top was made when the serum sodium concentration was 200 mEq/l. The lower tracing, 8 days later, was made at recovery.

dures to restore both the volume and the ionic composition of the body fluids.

### Summary

The homeostatic mechanisms utilized by the body to defend itself against dehydration have been described. The central role of these mechanisms is to sustain for the longest possible period of time the circulating volume and composition of the body fluids. In disease these adaptive mechanisms may fail. The clinical signs indicating such failure and their correlation and corroboration with and by laboratory measurements are discussed. Therapy of dehydration is discussed in light of these concepts.

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(Continued on Page 313)

# Seminar

## THE PYRROL PIGMENTS AND HEMOGLOBIN CATABOLISM

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HERE is a singular merit in the establishment of an E. T. Bell lectureship by the Minnesota Pathological Society. Dr. Bell has nurtured this society from its neonatal period. His guiding hand and penetrating wisdom, mellowed with his delightful sense of humor, have been mainstays of the society these many years. As one of his former and, may I say, continuing students for many years, it is a special privilege for me to give this first E. T. Bell Lecture.

I thought it might be appropriate to discuss a topic in which I became interested nearly thirty years ago, while a member of Dr. Bell's department. The general character of the advances in that interval of time depends, of course, upon many factors, among which may be mentioned a greatly augmented knowledge of porphyrin and bile pigment chemistry gained in part by older, classical methods. The more recent advances in this area rest on many new techniques, especially the application of the chromatographic method and the utilization of isotopic tagging. Some of the most significant advances were enabled by the discovery of Shemin and co-workers<sup>1,2,3</sup> that glycine and acetate are the essential building blocks of the porphyrin and bile pigment molecules. This, together with Westall's isolation of the monopyrrolic precursor, Waldenström's porphobilinogen,<sup>4</sup> and subsequent studies of intermediary substances, has provided clear insight as to the anabolic aspects of hemoglobin (heme) metabolism. While this is not the topic that I shall

The first E. T. Bell Lecture of the Minnesota Pathological Society.

From the Department of Medicine, University of Minnesota Medical School and Hospital, Minneapolis. The studies in this laboratory have been supported in part under contracts with the Surgeon General's Office, U.S.A., and the Atomic Energy Commission. Presented in part at the meeting of the Minnesota Pathological Society, October 18, 1955.

This lecture will appear in three installments, of which this is the first.

devote the most time to, it is desirable to comment briefly on the main facts that have now emerged, in order that anabolic and catabolic pathways may be in some measure compared.

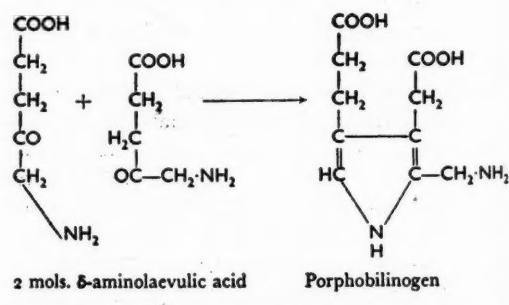
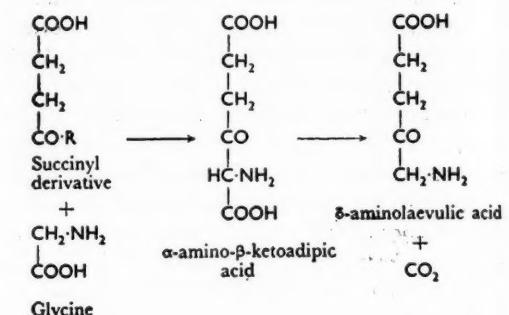


Fig. 1. Stages in the biosynthetic pathway to porphobilinogen. Four molecules of porphobilinogen are then employed in the formation of uroporphyrin, the  $\alpha$ -NH<sub>2</sub> group at the right being split off. (From C. Rimington, "Porphyrins" in *Endeavour*, page 135, July, 1955. Reproduced by permission of the publishers.)

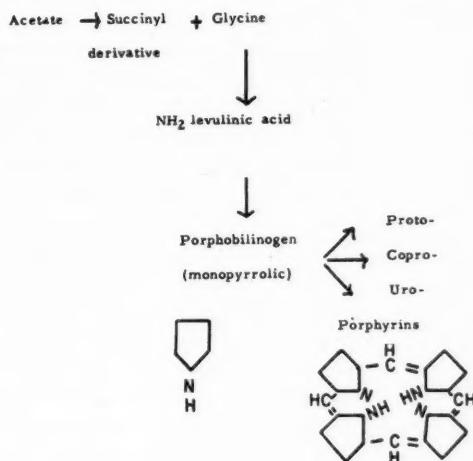
Of considerable interest is the recent emergence of porphobilinogen as the first pyrrol to be formed along the anabolic pathway to heme. Hitherto this was known only as the Ehrlich reacting compound characterizing the urine in acute porphyria. The isolation of porphobilinogen from such cases is an excellent example of the fashion in which a relatively rare disease may provide the key to a phenomenon of much more general significance.

## PYRROL PIGMENTS AND HEMOGLOBIN CATABOLISM—WATSON

The structure of porphobilinogen was established by Cookson and Rimington.<sup>5</sup> The studies of Shemin and co-workers<sup>6</sup> in this country, and of Neuberger and associates<sup>7</sup> in England, have clearly

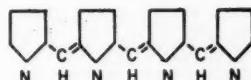
With this brief survey of the anabolic side it will be my purpose now to consider the problem of catabolism. In Figure 2 an introductory skeleton outline is shown contrasting the anabolic and

### ANABOLISM



### CATABOLISM

#### Tetrapyrromethenes



#### Bile pigments

(Bilirubin and urobilinogen group)

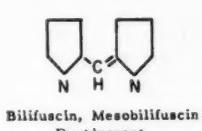


Fig. 2. The anabolic and catabolic relationships of the porphyrins and bile pigments, in skeleton outline.

shown that glycine and acetate are utilized in the biosynthesis of porphobilinogen, with  $\beta$ -ketoadipic and  $\delta$ -aminolevulinic acids as the intermediary compounds. This relationship is well shown in Figure 1, reproduced from a recent paper by Rimington.<sup>8</sup> The pathway from the porphobilinogen to the protoporphyrin of heme is not so clear. It will suffice to note at present that the concept of transition from porphobilinogen  $\rightarrow$  uro-  $\rightarrow$  copro-  $\rightarrow$  protoporphyrin<sup>9,10,11a</sup> was not supported by Dr. Schwartz' studies in this laboratory,<sup>11b</sup> which suggested either that a primary change might occur in some fraction of the porphobilinogen molecule, to explain the independent formation of various porphyrins, or that the transition from uro- to copro- to protoporphyrin might occur only with proporphyrins (porphyrinogens or reduced porphyrins).<sup>\*</sup> Rimington<sup>8</sup> has recently mentioned the latter possibility.

catabolic aspects of hemoglobin metabolism, from the standpoint of the pyrrol compounds. In relation to this outline I shall strive to present what I consider to be the more important recent advances and relate them to the more essential information from the past.

#### Conversion of Hemoglobin to Bilirubin

Lest there might be some thought that this subject does not have its traditional place in pathology I will commence my story by reference to the article by Virchow in the first volume of his "Archives of Pathology," 1847,<sup>12</sup> in which he documented for the first time the classical observation that hemoglobin is converted to bilirubin, or as he called it, hematoidin, when blood is extravasated in tissue spaces. Many pathologists after Virchow have concerned themselves with the problems of bile pigment formation and pathogenesis of jaundice. Among these may be mentioned Ludwig Aschoff, John McNee, George Whipple, Peyton Rous, Frank Mann and Arnold Rich. Although in the ensuing three-quarters of a

\*In a recent study with F. Bashour and S. Schwartz, to be published in detail elsewhere, <sup>14</sup>N labeled uroporphyrinogen I was converted by dog liver homogenate, *in vitro*, to coproporphyrin and protoporphyrin.

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century after Virchow's observation there was continued argument as to whether his hematoidin was identical with bilirubin, the principal bile pigment, the crystallographic studies of Fischer and

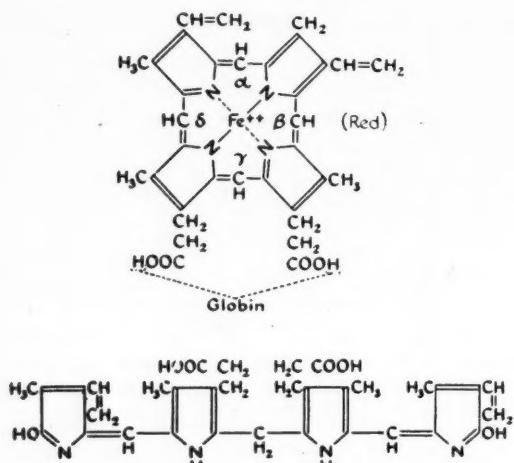


Fig. 3. Ferrous protoporphyrin globin (hemoglobin) and bilirubin.

Reindel in 1923<sup>13</sup> left no doubt that crystalline bilirubin as obtained from cattle gallstones or bile was identical with that forming in the tissues from extravasated hemoglobin. As we shall see in the following, however, there is a question whether the process of isolation from gallstones or bile induces a molecular change from a differing compound to the well-defined crystalline bilirubin.

The earlier history of the development of our knowledge of the origin of bilirubin and the pathogenesis of jaundice, these being clearly separate but closely related problems, is of much interest in its own right. I will do nothing more here than to sketch in a few of the important milestones, but to anyone who would interest himself in the earlier work on these topics, much of which has been too readily forgotten, I would strongly recommend Stadelmann's classic monograph on jaundice published in 1891.<sup>14</sup> Thanks to the generosity of Dr. Henry Ulrich, I am the proud possessor of a Stadelmann, and I have never failed to gain stimulus from reading the pages of his descriptions of the earlier work in this field.

According to Stadelmann, it was Tarchanoff who first proved beyond question that the bilirubin of the bile was derived from hemoglobin, indeed from the pigment fraction of the hemoglobin

molecule. Tarchanoff<sup>15</sup> observed striking increases of bile pigment concentration in the bile of dogs with bile fistulas, following the intravenous injection of hemoglobin solutions or of bilirubin itself, or following intravascular hemolysis induced by injection of distilled water. Minkowski and Naunyn<sup>16</sup> believed that hemoglobin was converted to bile pigment only in the liver. They worked with geese in which the administration of arseniuretted hydrogen ordinarily produced jaundice with ease. After removal of the liver, jaundice failed to appear. Stern<sup>17</sup> had previously shown that jaundice failed to appear in doves with the common duct ligated, in which the liver had been excluded from the circulation by ligation of all of its blood vessels. Stern had concluded from these experiments "that since exclusion of the liver did not lead to the collection of bile pigment in the tissues or secretion by the animal, the liver itself must be the site of formation of this pigment." Minkowski and Naunyn reached a similar conclusion with their geese and formulated the dogma "without the liver no jaundice."

With respect to Stern's conclusion, just referred to, Stadelmann made the following conservative but prophetic remark: "Can one really draw a conclusion to such an extent? There will be many careful scholars who will prefer to substitute" (in Stern's conclusion) "instead of animal organism, organism of the bird, and who will raise the objection that the organism of the mammals, especially that of man, may behave in a manner entirely different from that of doves." This prophecy of Stadelmann was fulfilled by McNee, then a young man working in Aschoff's laboratory in Freiberg, now Sir John McNee, emeritus professor of medicine in the University of Edinburgh. McNee pointed out that in geese the reticuloendothelial system is mainly concentrated in the liver and the spleen is almost rudimentary. Studying experimental hemolytic jaundice, he found evidence that conversion of hemoglobin to bile pigment was largely limited to the liver in geese, but in mammals the spleen and bone marrow assumed much greater significance.<sup>18</sup> It remained for Mann and his co-workers to perform the crucial experiment, namely, total hepatectomy in dogs.<sup>19,20</sup> I can well remember the clarity with which Dr. Mann presented the results of these beautiful experiments to this society in 1927. In brief, they revealed decisively an extrahepatic formation of bilirubin. Quantitative de-

termination of bilirubin concentrations in the blood to and from the spleen and bone marrow showed the importance of these tissues for the conversion of hemoglobin to bile pigment. This work was

heme is a ferro-protoporphyrin, hematin a ferrid-hydroxide protoporphyrin. The main excretory product of hemoglobin in the gastrointestinal tract is hematin and there is no conversion here to bile

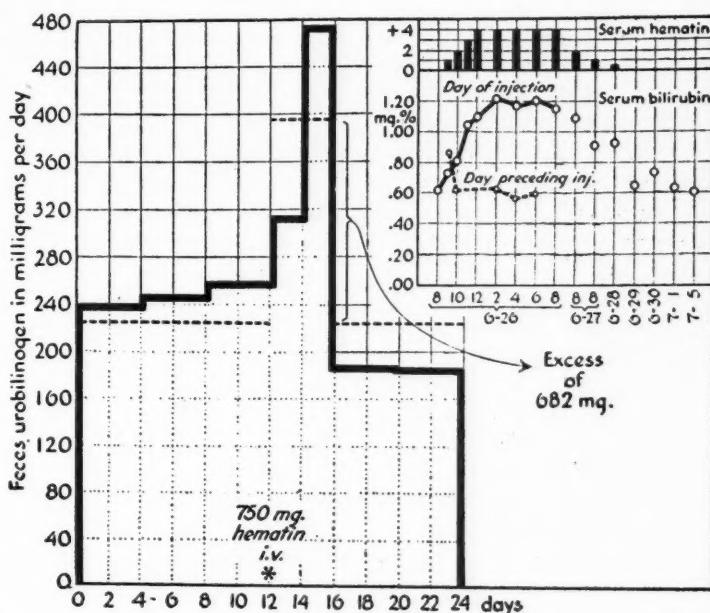


Fig. 4. Increase of serum bilirubin and fecal urobilinogen after intravenous injection of hematin in a normal adult human subject. (From I. J. Pass, S. Schwartz and C. J. Watson, *Journal of Clinical Investigation*, vol. 24, page 284, 1945. Reproduced by permission of the publishers.)

widely confirmed, and the participation of extra-hepatic tissues in the formation of bilirubin was thus clearly established.

The formulas shown in Figure 3 epitomize the problem of conversion of the heme in the hemoglobin molecule, to bile pigment. It should be noted that the hemoglobin molecule consists of four heme nuclei, as shown, for each molecule of globin, the latter comprising about 96 per cent of the weight of hemoglobin. We are only concerned here with the fate of the heme or prosthetic fraction, though, as will be indicated, there has been some belief that the protein is important in controlling the conversion of heme to bilirubin.

The exact pathway of this conversion in the body is still a matter of controversy. In the test tube hemoglobin is readily changed to hematin by relatively mild chemical treatment. This involves a change of the iron from ferrous to ferric, with addition of an OH at the iron atom. Thus

pigment. Possibly because of the ease with which hemoglobin is converted to hematin *in vitro*, earlier investigators, notably Brugsch<sup>21</sup> regarded hematin as the first intermediary in the pathway to bile pigment. Brugsch, in fact, was the first investigator to state that the intravenous administration of hematin in dogs with bile fistulas resulted in increased excretion of bilirubin in the bile. This was both confirmed and denied and there is a rather extensive literature on this controversy. The earlier work is well reviewed by Eppinger, 1920.<sup>22</sup> The most recent detailed discussion of the problem is to be found in Torben With's monograph, "The Biology of the Bile Pigments" (1954).<sup>23</sup>

Several observations led to a belief, for a time rather widely held, that hematin is a "blind alley" in hemoglobin metabolism, not converted to bile pigment. In particular this was based on the relatively rare occurrence of cases of "hematin icterus," in other words individuals whose blood

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serum contained only hematin and no increase in bilirubin.<sup>24,25</sup> Such instances were cited as evidence that hematin is not converted to bilirubin. Cases of this type are, of course, quite inconclusive as one must consider that the hematin may be steadily converted by the liver to bilirubin and that this is at once excreted. In a case of renal trauma and hemorrhage observed years ago in this clinic there was marked hematinemia without increase of the serum bilirubin, yet the feces urobilinogen was greatly increased.<sup>26</sup> While this did not prove that the hematin had been converted to bilirubin and thence to urobilinogen, such an explanation was quite compatible with the data. Subsequent studies with I. J. Pass and S. Schwartz,<sup>27a</sup> in which hematin was injected intravenously in normal individuals, gave clear evidence of a quantitative conversion to bile pigment. As seen in Figure 4, the amount of urobilinogen excreted in the feces agreed very well with expectation on the basis of the amount of hematin injected. Also, a significant rise in serum bilirubin was observed. In recent years this work has been fully confirmed by London<sup>28b</sup> using  $N_{15}$  tagged hematin; thus it is difficult to understand why the older studies of Gitter and Heilmeyer<sup>28</sup> and of Duesberg<sup>29</sup> failed to reveal evidence of increased bilirubin or urobilinogen formation following injection of hematin. In any event the concept<sup>24</sup> that hematin is a "blind alley" in hemoglobin metabolism rather than an intermediary in the pathway to bilirubin gained wide acceptance because of these observations. For reasons that are not clear, Lemberg<sup>31</sup> was unwilling to accept the belief that hematin is converted to bile pigment, and has been a principal proponent of the view that the first intermediary, rather than hematin, is a "green" hemoglobin or biliverdin-iron globin compound. The first compound of this type to be described was by Fischer and Lindner,<sup>30a</sup> using yeast, but Warburg and Negelein<sup>30b</sup> provided a more exact chemical method by the coupled oxidation of a pyridine hemochromogen with hydrazine, providing what they called a "green hemin." Lemberg<sup>32</sup> later showed that this was a double salt of biliverdin dimethyl-esterhydrochloride and ferric chloride, differing significantly from Lemberg's "green hemoglobin," the latter being obtained by a coupled oxidation with ascorbic acid.

In essence, the green hemoglobin concept of bile pigment formation as championed by Lemberg, depends upon a primary opening of the

protoporphyrin in hemoglobin by oxidative removal of the  $\alpha$ -methene bridge. The resulting biliverdin is still bound to iron and globin. The formation of free bilirubin requires a splitting off of iron and globin and the addition of two hydrogen atoms to the biliverdin molecule. All of these changes are well within the realm of feasibility, but their significance for the natural sequence of events is not clear. There is controversy as to the occurrence of green hemoglobins in relation to hemoglobin catabolism *in vivo*. Lemberg and co-workers,<sup>31,32</sup> Kiese,<sup>33</sup> Engel<sup>34</sup> and other investigators have reported that circulating red blood cells contain a small amount of a verdohemoglobin, but the more recent studies of Kench and associates<sup>35,36</sup> cast serious doubt on this concept. When anaerobic conditions were employed the amount observed was extremely small and not larger than was obtained on crystallization of oxyhemoglobin. Kench believed that these small amounts were probably formed during the isolation procedure and that the natural occurrence of verdohemoglobin in the red cells was doubtful.

While Lemberg and other proponents of the verdohemoglobin concept regard a continued attachment to globin as essential for biliverdin formation, Kench's studies clearly reveal that protein is unnecessary and that hematin is readily converted to bile pigment *in vitro*, under appropriate conditions. It is true that in their experiments the yield was consistently better when the heme ( $Fe^{++}$ ) or hematin ( $Fe^{+++}$ ) was combined with protein, either globin or albumin, but it appeared that the sole function of the protein in this regard was the protection of the biliverdin against further oxidation after it was once formed. It was also clear in these experiments that the state of the iron in the molecule was unimportant; just as good conversion was observed with ferric iron in hematin as with ferrous iron in hemoglobin or heme. It may also be noted that London<sup>3c</sup> has demonstrated the *in vivo* conversion of  $N^{15}$  protoporphyrin, as well as hematin, to bile pigment. Previous studies in this laboratory,<sup>27b</sup> in bile renal fistula dogs, had failed to provide evidence of such conversion but admittedly did not exclude it. Further work is necessary to elucidate the possible significance of protoporphyrin as an intermediary in bile pigment formation, under normal or abnormal conditions.

Thus the exact pathway along which hemoglobin is converted to bile pigment in the mam-

malian organism is not yet clear. Bingold and Stich<sup>37</sup> in their recent and latest review of this subject state that "in contrast to the still incomplete knowledge of the biosynthesis of hemoglobin it is possible today to provide an exact statement as to the biochemistry of hemoglobin catabolism." With all of the recent evidence in mind, especially the exact knowledge of the biosynthesis of protoporphyrin gained in the classic studies of Shemin and co-workers, and despite the optimism of Bingold and Stich, one is inclined to the belief that the opposite is more nearly correct and that our present knowledge of anabolism is more exact than that of catabolism. If, as according to Bingold and Stich, one accepts without question the Lemberg concept that the pathway *in vivo* is solely via a green hemoglobin and that hematin is not an intermediary under any circumstances, one may acquire a sense of security such as evidenced in their statement, quoted above. Yet a careful examination of the evidence makes one realize that this may be incorrect. The objection that hematin is never observed under normal circumstances, but only in the presence of hemolysis and especially hemolysis associated with liver injury, in no way proves that hematin is not formed as a normal intermediary and at once converted to bilirubin either in the liver alone, as Aschoff<sup>38</sup> assumed, or more widely, throughout the reticuloendothelial system. It should be emphasized that Mann and co-workers<sup>20b</sup> regularly observed hematin at the outset of increased bilirubin formation in extrahepatic sites and definitely regarded it as a normal intermediary between hemoglobin and bilirubin.

Earlier observations with I. J. Pass in this laboratory<sup>26</sup> indicated that epithelial specialization of cells is associated with a diminished production of the ferment necessary to bilirubin formation when hemoglobin is extravasated. In such areas hematin was often encountered without bilirubin whereas in spaces lined by mesenchymal cells bilirubin was often encountered without hematin, following extravasation of blood. These observations, however, permit two interpretations: one, that the epithelial cells do not have the ability of further conversion of hematin to bilirubin while the mesenchymal cells do; the other, that the epithelial cells convert hemoglobin to hematin, the mesenchymal cells hemoglobin to bilirubin, without hematin as an intermediary. The presence of hemoglobin, hematin and bilirubin in some fluids may perhaps be somewhat more indicative of the former possi-

bility. It should be noted that the conversion of hematin to bilirubin may well proceed over a verdohematin analogous to the "green hemoglobin." It is quite possible that both pathways are included in the natural sequence of events, variations in emphasis depending on as yet unknown factors.

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(To be continued in June issue)

## THE POSITION OF RADIOLOGY IN CARDIOVASCULAR DIAGNOSIS

(Continued from Page 280)

evidence of pulmonary sequestration by demonstrating the anomalous vascular supply to a segment of lung from the aorta directly. The method is useful as well in demonstrating arteriovenous communications in lung (Fig. 11) and to differentiate between gross cardiac dilatation and pericardial effusion. It has been used with profit to study pulmonary neoplasms.

The present position of radiology in cardiovascular diagnosis is one of major importance and each month that position is broadened and strengthened. In this field close co-operation with the specialties of cardiology and surgery is man-

datory if the full benefits of angiography are to be realized. The haphazard employment of the new and complex methods is not to be recommended and the most glittering radiographic images are of little value until they have been thoroughly and expertly analyzed. The required apparatus is costly and highly specialized, but the great value of the diagnostic results to be expected justifies the capital investment and the detachment of able radiologists from other endeavors to devote themselves to this type of work and the further advance of knowledge. The future of cardiovascular radiology appears to be brilliant and assured.

# Continuation Studies

## FRACTURES OF THE METACARPALS, METATARSALS AND PHALANGES

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Fractures of the metacarpals and phalanges of the hand and metatarsals and phalanges of the foot are very common problems with which we all have to deal. Although these are not considered major fractures, the proper handling of them leads to a much happier patient and a quicker and more complete functional rehabilitation of the injured parts.

Fractures of the phalanges of the toes are common and of importance largely only because of their nuisance quality. Most of these fractures can be successfully treated by reassurance and by the use of proper foot wear. This involves the use of a stiff sole (largely preventing motion in the toes incurred in walking) and relief from pressure on top of the toe from the upper portion of the shoe during the period which the toe may be swollen and painful. The use of traction can probably well be reserved for displaced fractures extending into the articular surface at the metatarsalphalangeal articulation, particularly in the great toe.

The metatarsal bones of the foot tend to splint one another quite securely so that they do not usually become greatly displaced when fractured except with severe injuries. Treatment again can frequently be accomplished by the use of a stiff soled shoe with reinforced shank and proper longitudinal and anterior arch supports. At times greater comfort can be obtained by the use of a well applied short boot cast molded carefully beneath the foot and application of a walking heel.

The frequently seen avulsion type fracture at the base of the fifth metatarsal may go on to fibrous union when displaced but is seldom symptomatic. In children, confusion with the epiphysis present at the base of the fifth metatarsal should be avoided. This will be bilateral and smooth. There is present in some feet a separate ossicle in this area, the os vesalianum, which again is usually bilateral and smooth.

The possible occurrence of "march" or "stress" fractures of the metatarsals is generally well known today. The rather spontaneous nature of this fracture or the appearance of callus or new bone involved in healing should not lead to consideration of biopsy nor amputation for bone tumor.

Avoidance of over-treatment of fractures of the foot may help to decrease the occasional prolonged rehabilitation seen with the development of painful osteoporosis.

In contradistinction to the toes, the function of the fingers is of extreme importance; and treatment of fractures of the phalanges in the hand is aimed toward the early re-establishment of this high degree of functional capacity. In general, splinting of fractures in the hand should be accomplished in functional position, this being the position of partial flexion. Tongue blade splinting is to be avoided. Splinting should be maintained only for that period necessary to allow sufficient healing to insure stability of the fractured fragments. Active motion may then be started to prevent undue stiffening of the metacarpal-phalangeal and interphalangeal articulations.

Fractures of the distal phalanx will usually merely require protection, particularly when the finger nail is intact. Fractures of the middle and proximal phalanx may require traction in order to prevent shortening and to maintain alignment. This traction may be either skeletal or occasionally skin traction. Traction should be applied over a curved splint, and the fact that each finger flexes in a different axis of rotation at the metacarpal-phalangeal articulation should always be remembered. Fractures extending into the joint at the base of the second and third phalanges are particularly troublesome and tend to give a broad and partially subluxated joint unless traction is maintained until good healing is present.

Fractures of the neck of the metacarpals are frequently seen particularly in the fifth and fourth

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metacarpals. Because of the nature of the fracturing force, the head is usually tipped forward into the palm and this palmar prominence of the head must be corrected in order to prevent a pressure point which may afterwards be bothersome in gripping. This angulation can usually be corrected by manipulative pressure using the flexed proximal phalanx to push against the palmar surface of the head of the metacarpal. In fractures of the shafts of the metacarpals, rotation deformities must again be considered and can be prevented by accomplishing reduction with the fingers flexed at the metacarpal-phalangeal joint and in apposition to one another.

Special attention should also again be called to the fracture at the base of the first metacarpal in the thumb which extends into the joint and allows a subluxation or dislocation of the main

metacarpal fragment. This is called Bennett's fracture. It is important that these fractures be maintained with complete abduction of the first metacarpal, and as it is an unstable fracture, frequently slipping after reduction, traction on the abducted thumb is usually necessary. It is important that frequent radiographic checks be used in the first two weeks following reduction to see that position is maintained.

A word should be said about the use of Kirschner wires in the treatment of fractures of the metacarpals and phalanges. Fine Kirschner wires are frequently of great benefit in the treatment of these fractures and may at times allow early use of other portions of the hand.

By reviewing these injuries it is hoped that the reader may facilitate the care and rehabilitation of these common fractures.

## GALACTOSEMIA

The cause of an often fatal metabolic disease of children has been discovered by scientists of the Public Health Service's National Institute of Arthritis and Metabolic Diseases, according to Surgeon General Leonard A. Scheele.

Drs. Herman M. Kalckar, Elizabeth P. Anderson, and Kurt J. Isselbacher, in work conducted at the National Institutes of Health, Bethesda, Maryland, have unraveled much of the mystery surrounding the little understood children's disease, galactosemia, also known as galactose diabetes.

This disease ordinarily appears within a few days after birth. The infant suffering from galactosemia is unable to utilize or even tolerate milk in any form. Lactose, often called milk sugar, contains another sugar, galactose. This substance cannot be handled by the child's system if he has galactosemia.

The Institute scientists have discovered a hitherto unknown enzyme in normal red blood cells, which they call P-Gal transferase. This enzyme, they found, is necessary to complete conversion in the body of galactose into glucose, the common sugar of the blood.

Diagnosis of galactosemia is difficult because the symptoms are similar to those of other disorders. Diarrhea, lack of appetite, loss of weight, and jaundice appear in the earlier stages. In later stages, it leads to

cirrhosis of the liver, mental retardation, blindness due to cataract, and death.

Early recognition of galactosemia is highly important, since the disease progresses rapidly, leaving serious irreversible changes. On the other hand, when diagnosed in an early stage, treatment is simple. The affected child, placed promptly on a milk-free diet, will grow and develop normally.

The discovery of the basic cause of the disease promises to provide a rather simple diagnostic test, making earlier life-saving treatment possible.

Scientists at the Institute became interested in the disease when research workers in Manchester, England, reported certain abnormalities in the red blood cells of infants with galactosemia. Their own work has revealed that the enzyme, P-Gal transferase, which they had found in normal blood, was missing in the blood of children with this disease, and that this inherited metabolic defect was the basis of the disorder. A report on their research is published in a recent issue of the Proceedings of the National Academy of Sciences.

Knowledge of P-Gal transferase not only makes possible the development of a rather simple diagnostic test for galactosemia, but it also points the way to exploration of the distinct possibility that impairments in galactose metabolism may be a factor in other disorders of unknown origin.

Current



Concepts

## DIAGNOSIS AND TREATMENT OF THROMBOANGIITIS OBLITERANS (BUERGER'S DISEASE)

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Thromboangiitis obliterans is a segmental inflammatory obliterating disease of the arteries and veins of the extremities that tends to produce ischemia of tissues and occasionally gangrene. It occurs almost exclusively in young and middle-aged men. Typical lesions rarely occur in the viscera but patients who have the disease also have a somewhat increased tendency to undergo occlusion of the coronary, cerebral and mesenteric arteries later in life as the result of atherosclerosis, a different pathologic process.

The exact cause of thromboangiitis obliterans is not known. However, available evidence indicates that the most important factor in almost all persons in whom the disease develops is a peculiar individual susceptibility of the vessels of the extremities to endothelial injury as the result of absorption of some product in tobacco smoke.

### Diagnosis

The ultimate criterion for the diagnosis of thromboangiitis obliterans is a rather typical histopathologic picture found in the affected vessels; these characteristic changes include endothelial proliferation, occlusion of the lumen by a thrombus, extremely cellular organization of the thrombus and diffuse panangiitis without necrosis or destruction of the medial coat. Not found are subendothelial atheromatous lesions containing fat and cholesterol or subendothelial or medial calcification. Primarily, the lesions affect small and medium-sized arteries, such as the posterior tibial, anterior tibial and major digital arteries. In addition, veins accompanying these arteries and superficial veins of comparable size are frequently affected. The disease almost never begins in large

arteries, such as the femoral and iliac, but occasionally it progresses into them from more distal branches.

The diagnosis of thromboangiitis obliterans almost always can be made clinically and without resorting to arterial biopsy. In making the diagnosis, it is important to remember that thromboangiitis obliterans is only one of several diseases that may produce ischemic manifestations in one or more extremities. It is most likely to be confused with arteriosclerosis obliterans. Sometimes, but less commonly, it is confused with peripheral arterial embolism, simple arterial thrombosis, scleroderma (acrosclerosis), Raynaud's disease, ergotism and arterial occlusions due to acute or chronic occupational trauma. In making the diagnosis of thromboangiitis obliterans, it is first necessary to establish the fact that occlusive arterial disease exists in one or more of the extremities.

*Intermittent Claudication.*—Intermittent claudication is an almost pathognomonic symptom of occlusive arterial disease. The currently accepted definition of intermittent claudication is a pain, ache, tightness, or sense of abnormal fatigue felt in the region of certain groups of muscles in the extremities that is never present during rest, develops only after a period of sustained exercise of the muscles and is relieved rather promptly by rest without change of position. Intermittent claudication is not a disease. It is a symptom and it indicates only the presence of some type of occlusive arterial disease. It may occur as the result of thromboangiitis obliterans, arteriosclerosis obliterans, arterial embolization or simple arterial thrombosis. In thromboangiitis obliterans, it may occur in the calf or in the arch of the foot, where it may be mistakenly attributed to mechanical derangements of the foot and arch. Intermittent claudication in the thigh or hip is rarely

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seen in thromboangiitis obliterans. Other types of pain that may occur in cases of more advanced chronic occlusive arterial disease in which the evidence of ischemia in the affected extremity is more obvious are rest or pretrophic pain in digits, pain associated with ulcers or gangrene and pain associated with ischemic neuropathy of major nerve trunks.

**Arterial Pulsations.**—The objective manifestations of chronic occlusive arterial disease are impairment or absence of pulsations in one or more of the major arteries of the extremities and, in advanced disease, abnormal pallor of one or more of the extremities on elevation, with delay in the return of color and in filling of superficial veins on dependency after elevation. Also, there may be abnormal and persistent coldness of one or more of the extremities or of one or more individual digits, persistent bluish or reddish discoloration of one or more digits, and gangrene or ulceration of one or more digits or parts of the foot.

In examination for impairment or absence of arterial pulsations, the brachial arteries, antecubital arteries, radial and ulnar arteries at the wrist, femoral arteries in Scarpa's triangle, popliteal arteries, posterior tibial arteries behind the internal malleoli and dorsalis pedis arteries should be palpated. However, impairment or absence of pulsations in one or both dorsalis pedis arteries is not necessarily significant of occlusive arterial disease, since these arteries are small or absent as the result of developmental anomaly in about 5 per cent of normal persons. Impairment or absence of pulsations in the posterior tibial arteries, however, is almost certainly indicative of chronic occlusive arterial disease. If the diagnosis of occlusive arterial disease has been established by objective examination, it is almost always possible to determine clinically the nature of the underlying arterial disease.

**Other Diseases.**—Raynaud's syndrome, or transient blanching of one or more of the digits on exposure to cold, may occur in thromboangiitis obliterans. The involvement of the digits is almost always asymmetric, whereas in true Raynaud's disease the involvement is usually symmetric. Arterial pulsations are not impaired or absent in true Raynaud's disease. The occurrence of sclerodactyly or scleroderma associated with Raynaud's syndrome indicates the presence of

acral scleroderma (acrosclerosis), not thromboangiitis obliterans.

Ergotism is comparatively rare in this country except when the patient has taken or been given medicine containing ergot or its derivatives. Ischemia of the extremities produced by ergotism is almost always symmetric, whereas it is almost always asymmetric in the other chronic occlusive arterial diseases. If arterial occlusion is due to arterial embolism, there will almost always be coexistent serious cardiac disease in the form of recent myocardial infarction, auricular fibrillation or subacute bacterial endocarditis. Also, the onset of the ischemic manifestations produced by embolization of the extremity almost always will have been marked by sudden arterial occlusion, whereas sudden occlusion of large arteries is not common in thromboangiitis obliterans. Simple or essential arterial thrombosis is rare and usually is associated with polycythemia vera, severe infectious disease or advanced malignant neoplasms. When none of these are present, the diagnosis of simple arterial thrombosis should be made with great caution.

**Thromboangiitis Obliterans Versus Arteriosclerosis Obliterans.**—The two commonest chronic occlusive arterial diseases are thromboangiitis obliterans and arteriosclerosis obliterans. Some difficulty may be encountered at times in differentiating these two conditions, although the clinical features now to be mentioned usually permit such distinction. Thromboangiitis obliterans almost always produces its first clinical manifestations before the age of forty years, whereas arteriosclerosis obliterans usually appears after the age of forty. There are a few exceptions to this rule, however, and patients who experience the first signs of ischemia in an extremity between forty and fifty years of age may have either disease. Thromboangiitis obliterans is rare in women (1 per cent), whereas about 15 to 20 per cent of cases of arteriosclerosis obliterans occur in women. The presence of definite signs of ischemia in one or both hands associated with similar manifestations in the lower extremities is strong evidence in favor of thromboangiitis obliterans, since such ischemic manifestations are almost unknown in the upper extremities of patients who have arteriosclerosis obliterans. A good history of thrombophlebitis or the actual presence of the lesions of superficial thrombophlebitis in small veins in association with occlusive arterial disease occurs in about 40 per cent of

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patients who have thromboangiitis obliterans but practically never is noted in arteriosclerosis obliterans.

The following are almost certain indications that the disease in question is arteriosclerosis obliterans rather than thromboangiitis obliterans: (1) roentgenographically demonstrable calcification in the femoral or iliac arteries; (2) the presence of diabetes mellitus; (3) increased values for plasma cholesterol and total lipides and (4) a systolic bruit heard over a femoral or iliac artery or over the abdominal aorta. In the age group in which there is most likely to be a question as to the differentiation of thromboangiitis obliterans and arteriosclerosis obliterans, absence of pulsations in popliteal and femoral arteries is much less common in thromboangiitis obliterans except when the disease has been present for a considerable period, with gradual progression.

### Treatment

Thromboangiitis obliterans is characterized by exacerbations when new segments of arteries become occluded and remissions when there is slow development of collateral circulation around the occluded segments. The most important feature in the treatment is absolute insistence on abstinence from tobacco smoking. If the patient completely discontinues smoking, exacerbations of the disease are almost unknown. If the diagnosis is made early in the course of the disease and if the patient stops smoking, the collateral circulation may develop to a point at which all symptoms and signs disappear other than absence of pulsations in some of the arteries.

**General Measures.**—An important part of the management of patients who have thromboangiitis obliterans is instruction regarding care of the feet and hands and avoidance as far as possible of any minor or major injury to them, whether it be of mechanical, chemical, or thermal origin. As in all conditions associated with chronic ischemia of an extremity, most instances of gangrene or ischemic ulceration develop as the result of some minor and avoidable trauma, such as pressure on toenails from ill-fitting shoes, cuts or bruises, overtreatment of fungous infection or ill-advised treatment of corns, calluses or ingrown toenails. Major or even minor surgical operations on the feet or toes should never be undertaken in any patient until it has been determined that ischemia or evi-

dence of occlusive arterial disease is absent; if signs of such disease are found, the surgical procedure should be deferred in almost all instances. The local application of strong chemicals should be avoided. Patients who have thromboangiitis obliterans should be warned to avoid exposure to cold, since even a minimal degree of such exposure sometimes may result in frostbite in an ischemic extremity. Also, they should be warned not to use any hot dry objects, such as hot-water bottles or electric pads, to warm an ischemic extremity. Unfortunately, many patients with thromboangiitis obliterans do not come under the care of a physician until the disease is well advanced. In these patients, considerable permanent damage already may have been done to the arterial system in one or more extremities, and the complications of ischemic ulceration or gangrene already may have occurred.

Patients who have ulcerative or gangrenous lesions should be treated in the hospital and should be kept off their feet in a warm room (75 to 80° F.). Only bland topical applications should be used on the lesions. The use of warm soaks with a solution of boric acid for 20 to 30 minutes two to four times a day, with application of simple dry dressings between soaks, constitutes a simple and safe local treatment. When gangrenous tissue has sloughed and residual ulcers are relatively clean, the use of powdered erythrocytes may expedite healing. In general, ulcers and gangrenous lesions should be undertreated rather than overtreated, since many local preparations and ointments that would be harmless when used in the absence of ischemia may aggravate and cause extension of lesions when ischemia does exist.

Local infection in the surrounding tissues almost always is associated with gangrenous and ulcerative lesions, and the organism usually responsible for this infection is *Micrococcus pyogenes* (*Staphylococcus*). Oral or parenteral antibiotic therapy may be of considerable value in eliminating these local infections, thus giving the tissues a better chance to heal. The most effective current antibiotic against the largest number of strains of *M. pyogenes* should be used unless it is possible to obtain the specific organism by culture and determine its sensitivity to various antibiotics.

**Surgical Treatment.**—Regional surgical sympathetic ganglionectomy is of value in many patients who have thromboangiitis obliterans and contra-

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indications to this procedure rarely exist. The operation is not necessary when the disease is mild and early and is associated with minimal evidence of digital ischemia, whereas the procedure is futile in the presence of advanced ischemia, with extensive gangrene extending into the foot. When gangrene is confined to one or more digits, it is usually advisable to wait until evidence of progression has stopped before sympathetic ganglionectomy is done. Sympathectomy is indicated in most cases of moderate ischemia with or without minor ulcerative or gangrenous lesions. The use of various drugs for the production of vasodilatation is not often of value and is distinctly inferior to sympathetic ganglionectomy.

When mass gangrene of digits or portions of digits exists, surgical intervention should not be attempted until all evidence of local infection and inflammation around the line of demarcation has disappeared. Even then it is usually best to wait and allow the gangrenous tissue to slough spontaneously, but in some instances healing may be expedited by gentle débridement through the line of demarcation. Amputation of the entire toe through its base occasionally may be advisable; when this is undertaken, it should be always recognized that healing may be delayed and that more gangrene may develop at the site of amputation. Even in patients who have severe and persistent pain with gangrenous lesions, amputation of a leg should be delayed as long as possible. If smoking is stopped and unless the gangrene extends into

the distal part of the foot, the lesions usually will heal ultimately. When gangrene extends into the foot, the ultimate survival of a useful foot is unlikely and amputation through the midcalf is almost always necessary.

Currently, surgical excision of occluded segments of arteries with replacement by arterial homografts or prosthetic tubes is not practical in thromboangiitis obliterans because of the small size of the involved arteries and the multiplicity of the occluded segments.

### Summary

Thromboangiitis obliterans is a specific disease entity but it is only one of several occlusive arterial diseases that involve extremities. The diagnosis almost always can be made clinically and the condition usually can be distinguished from other chronic occlusive arterial diseases, including arteriosclerosis obliterans, which is a somewhat more common disorder.

The treatment of thromboangiitis obliterans consists of complete abstinence from smoking tobacco, careful protection of involved extremities against major and minor chemical, mechanical and thermal trauma, regional sympathetic ganglionectomy in most cases, conservative local treatment and antibiotic therapy for ischemic ulcerative and minor gangrenous lesions, and conservative amputation or débridement for mass gangrene of digits.

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## CHRONIC PYURIA

(Continued from Page 284)

In some cases an infection will clear with a particular antibiotic, only to recur as soon as it is stopped. Here one should reinstitute the original treatment until the urine clears, then gradually reduce the dose in an effort to ascertain the minimum which will keep the urine clear without harming the patient. One such patient of mine has taken one 250 milligram capsule of aureomycin daily since it first became available, without any ill effects; if he stops it, his urine clouds up at once. Since he has large bilateral hydronephroses which preceded a successful transurethral resection, this suggests the potential usefulness of this regimen.

A method used at the Mayo Clinic in similar

circumstances involves giving the agent which has been found to be capable of clearing the urine for one week of each month.

Careful application of the principles outlined in this presentation will control the majority of urinary infections one should not hesitate to repeat any indicated part of the investigation to make sure that nothing has been overlooked. A few will persist regardless of the methods used to combat them; in the present state of our knowledge we must await the development of new agents. Fortunately, some of these patients will survive, apparently unharmed, for many years especially if the kidneys do not become involved.

# Public Health

## DIAGNOSTIC STANDARDS AND CLASSIFICATION OF TUBERCULOSIS

E. A. MEYERDING, M.D.  
Saint Paul, Minnesota

The tenth edition of *Diagnostic Standards and Classification of Tuberculosis*, published by the National Tuberculosis Association, has recently been distributed to Minnesota physicians, medical students and public health nurses by the Minnesota Tuberculosis and Health Association.

Designed to bring the reader up to date in several fields, the new edition is the result of almost two years of work by an American Trudeau Society committee headed by William Spencer Schwartz of the Veterans Administration Hospital, Oteen, North Carolina.

In a revision of the clinical classification of pulmonary tuberculosis, the term "arrested" has been dropped and the nomenclature confined to "inactive," "active," and "activity undetermined." A section on the diagnosis of nonpulmonary tuberculosis and a section on fungi pathogenic for man have been added. The latter addition was made because some fungi "produce diseases that mimic the clinical and pathological signs of tuberculosis to such an extent that the mycoses must be considered in making a differential diagnosis."

The section on the tuberculin test has been enlarged to an entire chapter in recognition of its growing importance. Abstracts from this chapter follow:

"There has been much discussion of the value of the tuberculin reaction as a case-finding tool. As a screening test it identifies on the one hand persons who do not need further testing or examination for the presence of tuberculosis, and on the other those who do need further study. Its value as a screening test is generally low in population groups where tuberculous infection is so widely disseminated that the majority of persons react, and correspondingly high in population groups where dissemination is restricted and few react to the test. The tuberculin test has special value when employed periodically in groups with unusual exposure to the disease, such as nurses, doctors, and students in

hospitals or other places where cases of tuberculosis may be concentrated."

"... Of the tuberculin tests, the intracutaneous method is the most sensitive. It permits the administration of accurately graduated amounts, thus making it possible to detect cases with a low threshold of sensitivity to tuberculin. The general use of the Pirquet and the patch tests is not recommended since they are not as reliable as the Mantoux, particularly in adults."

Changes in the treatment of tuberculosis are reflected in the insertion of a chapter on bacteriology as it relates to chemotherapy in which special attention is paid to the principles involved in tests to determine the drug-susceptibility of tubercle bacilli. Several paragraphs are devoted also to a description of methods to be employed in order to study bacteria in lesions removed by surgery.

The chapter on screening classification for mass chest x-ray surveys deals with two kinds of mass surveys which have been "highly successful"—community-wide and special group surveys. Emphasis is placed on the importance of x-raying all hospital admissions and outpatients. "The effort to promote and maintain the hospital's interest in this program is well repaid," the book states, "as experience indicates a three to four times greater incidence of tuberculosis than is found by chest roentgenologic surveys of the general population. Also, attention may be drawn to other pulmonary and cardiac abnormalities hitherto unrecognized."

Ever since 1917, when the first formal edition appeared, *Diagnostic Standards* has made possible a uniform interpretation of diagnostic findings in tuberculosis and served as a guide for terms used to designate the disease state. Today, *Diagnostic Standards* is known the world over. It is the standard reference book for medical students in this country and is widely quoted in medical literature in this country and abroad.

# Editorials

## CHANGING CONCEPTS IN PSYCHOSOMATIC REACTIONS

The fact that psychophysiological mechanisms play a significant role in the development of disease is almost universally accepted by both medical scientists and clinicians. However, when it comes to formulating the nature and mechanics of the psychophysiological processes, there has been much less general agreement. The medical literature reflects definite changes in psychosomatic theory. Earlier studies associated typical overt personality descriptions with specific psychosomatic disorders as, for example, the driving, ambitious, successful person with peptic ulcer. Following this, there was an attempt to attribute the cause of a particular disorder to psychological factors which were both specific and symbolic. Peptic ulcer was said to result from a conflict between the wish to be cared for and a striving for independence. More recently, the trend has been to consider that many different psychological factors may produce a given disorder with the nature of the response depending upon constitutional factors and acquired vulnerability of the organ involved. Thus, peptic ulcer may be produced by conflict over dependency needs, conflict about expressing hostile or aggressive impulses, conflict regarding sexual (masculine-feminine) drives, or combinations of these conflicts within a given individual.

This concept of multicausality has become increasingly popular under the aegis of controlled laboratory and clinical research. One reads with increasing frequency statements to the effect that investigators are less impressed with differences in the personality structures of patients with different psychosomatic reactions than with the similarities. Whether continued research will support the multicausality concept of psychosomatic reactions remains for the future. What does seem important at this point is that the problem is continually being more objectively evaluated by research methods rather than by setting about to "prove" by *post facto* means a particular pet theory as had been done earlier.

CLARENCE J. ROWE, M.D.

JOHN F. BRIGGS, M.D.  
ARTHUR H. WELLS, M.D.  
HENRY G. MOEHRING, M.D.

## AGAMMAGLOBULINEMIA

Agammaglobulinemia, a newly recognized metabolic disorder of the reticulum mesenchyme, was first described by Bruton in 1952. His initial observation of electrophoretically absent gamma globulin in a pediatric patient suffering from repeated bacterial infections sounded the keynote to this disease. Subsequently, as many more reports began to appear in the literature and clinical experiences accumulated, two distinct forms were delineated, the congenital and the acquired types. The congenital type occurs only in male children and is transmitted as a Mendelian sex-linked recessive trait. The acquired type is found in both male and female adults, with no particular selective differentiation with regard to age, and a history of previous good health is usually obtained.

The concept of immunologic paralysis in this disease became apparent quite early to students of this disorder, in that in either the congenital or the acquired type, recurrent bacterial infections appear to be a common denominator. Other findings common to both include absence of iso-hemagglutinins, failure of plasma cell formation, absence of antibodies from the blood and tissues, and failure of immunologic response to antigenic stimulation. A classical demonstration of the above was the successful transplant of a homograft to an agammaglobulinemic patient by Good and Varco.

An important relationship stressed by Good has been the absence of gamma globulin and concomitant failure of plasma cell production. This would implicate the plasma cell as being responsible for the formation of antibody and probably gamma globulin as well. In one of Good's patients who had resection of a lobe for bronchiectasis, microscopic sections failed to reveal the presence of any plasma cells. Although, characteristically, this cell type is very commonly encountered by pathologists in chronically diseased tissues, no plasma cells were found on microscopic examination in this patient. Further antigenic stimulation of lymph nodes, which in the normal person regularly results in medullary plasma cytosis, fails to

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induce plasma cell formation in nodes of the agammaglobulinemic patient.

Hypogammaglobulinemia and agammaglobulinemia may be encountered as either a manifestation of a physiologic phenomenon or the result of a disease state apart from agammaglobulinemia. The former is encountered as a delayed assumption of gamma globulin production on the part of the infant, during which time progressive decrease in the serum level of the passively transferred maternal gamma globulin is occurring. During this time, susceptibility to bacterial infections may be increased just as in congenital agammaglobulinemia.

The occurrence of hypogammaglobulinemia may be noted as part of the nephrotic syndrome in children. Here, however, hypo albuminemia differentiates between the electrophoretic patterns in the two conditions.

Paradoxically, agammaglobulinemic patients seem to handle most virus infections well. However, virus hepatitis resulting in liver destruction and death has occurred in these patients.

Prophylactic treatment with gamma globulin has proved successful in children. Although there is some question of its efficacy in adults, at present it seems the treatment of choice for agammaglobulinemia. The recommended dosage is 0.6 cc. of standard gamma globulin preparation per Kg body weight given at four-week intervals. It may be that the prophylactic antibiotic treatment will offer even better protection of adults with agammaglobulinemia or that a combination of the two approaches will be the most effective means of preventing disease in these patients.

WILLIAM F. MAZZITELLO, M.D.  
ROBERT A. GOOD, M.D.  
*University of Minnesota*

### ESTATE PLANNING FOR PHYSICIANS

It has been said that it is just as important for every doctor to have a well-conceived, current estate plan for the benefit of his family as it is for every family to have the services of a doctor. This is true. No course of treatment is possible if death eliminates the opportunity to plan one's affairs.

In our work as executor of wills, as trustee of both living trusts and trusts under wills, and as investment agent, we have seen the estate plans of many doctors, which have been prepared by their attorneys. It has been our duty, acting either alone

or in conjunction with a friend or a member of the family, to carry out the terms of the plan as expressed in the will or trust agreement. From this experience, we can make certain generalizations. Often the estate of the doctor consists of a fine home, a comparatively large life insurance program, securities, and the value of his practice. The latter may be a sole interest or a partnership interest. In rural areas, the doctor may have investments in farm lands.

The value of all of the above property is includable in the doctor's taxable estate. In most cases, this value exceeds \$60,000, the amount of the federal estate tax exemption. Thus, the doctor needs the benefit of careful estate planning to make sure his estate qualifies for the "marital deduction." This is a provision which enables an estate owner to pass to his surviving spouse, either outright or in trust, one-half of his estate free of federal estate taxes. It is also very important that the "second set" of taxes be saved for the benefit of his children.

The doctor should be sure that the management of his assets will be in experienced and competent hands after his death to assure the security of his family and to relieve his wife of these unfamiliar burdens. If the doctor is relatively young, he should be concerned about not only the care and support of his wife in the event of his death, but also the education and maintenance of the children if both he and his wife die during the minority of the children.

If he is in a partnership, it is probably advisable that he have a partnership agreement, and in many cases a buy-and-sell arrangement with the other partner or partners, possibly funded by life insurance.

If the doctor is in a high income tax bracket and has any sizable amount of income-producing assets, he may find it advisable to create short-term trusts, the income from which, during the ten-year period, could be taxed either to the trustee or to his children.

The doctor may find it advisable to make gifts and use part or all of his gift tax exemptions, both state and federal. Such gifts would remove part of his estate from the top death tax brackets.

Since the doctor is a busy man engaged in the most rewarding of all professions, from the standpoint of service rendered to humanity, he very seldom can give adequate time to his own financial affairs. He should investigate the services of

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ferred in an investment management agency account, in which investment recommendations are made to him, his entire portfolio is constantly reviewed, and all detailed work is done for him.

Because estate planning is the best use and arrangement of a person's property to carry out his objectives, every doctor needs estate planning to a greater or lesser degree as every layman may need medical assistance in varying degrees. Where does the doctor get his estate planning help? The key man is the attorney. All legal instruments, such as a will or a trust agreement, and the solution of all legal questions are matters for the doctor's own attorney.

Any trust company will be happy to share with the doctor the experience it has gained in the practical administration of many estates and trusts.

HARRY L. HOLTZ  
*First Trust Company of Saint Paul*

### PAINT—ITS USE AND VALUE

Although paint and protective coatings have many uses and affect many phases of everyone's life, we might consider in a very limited manner its value as protection of property—home, building and the like—and its value as beauty and decoration.

As a protective coating, paint is used to guard and protect property against the weather and ravages of rust and rot. Of course, thinking of exterior painting, the value of the home is also enhanced by beautifying its appearance. Exterior paint makes houses more pleasing to live in and gives people pride in their homes and neighborhood.

In studying the painting of the exterior and interior of a home, we run into the same problems that affect every type of structure, be it a store building, office, school, or institution. The exterior of a house may be constructed of a combination of materials such as wood, concrete, stone, brick, shingles (wood, asphalt, cement-asbestos), sash and doors of wood, aluminum and steel, all of which require different paint materials for the different assignments for protective coating and color. Whether you do the painting yourself as a hobby or out of necessity, or hire someone to do it for you, you should seek the advice and information regarding preparation, types of materials and methods of application from some reliable paint salesman or paint store or the services of a reputable painting contractor adequately covered with

insurance. Too often paint failures result from improper preparation, application and materials that cause no end of trouble and expense later on. The very best paints placed in the hands of unskilled or careless individuals will usually be applied improperly and result in unsatisfactory service and appearance. A few basic principles to remember when painting are: (1) be sure the surface you are painting is dry, (2) that moisture is not trapped behind the paint, (3) that paint is not applied in too heavy a coat and the old coatings that are too thick, scaling and cracking have been removed before applying another coat, (4) that each coat of paint is thoroughly dry before another is applied, (5) and, last but not least, that the proper type of material for the surface to be painted is selected and that quality material is used.

The interior of a home or building, of course, is not painted with any thought of protection against weather damage but as protection against the hard knocks given by human beings as well as for beauty, cleanliness, light reflection and the like. Floors, more than any other surface, really need protection against the hammering of heels, unless they are completely carpeted. If the floor is of new wood it should be machine sanded first, followed with at least two applications of floor sealer and waxed; or, varnished two or three coats. The only maintenance necessary from this point on would be washing and, on occasion, rewaxing. Floors with a satin or dull finish have more beauty than with a glossy finish. Ceilings and walls, whether plaster or drywall construction (sheetrock), should be painted or papered with a thought of applying a lovely color that would give a smooth and eye-pleasing quality. If painted, a flat paint of the "alkyd" type should be used with careful consideration in choosing colors that will give pleasing, inviting and harmonious surroundings. Should you wish to paper walls that have been previously painted, all that is necessary is to wash and prepare them first before papering. However, if the walls are papered and you should wish to paint them, it is a good practice to remove the paper first, then wash thoroughly and prepare before painting. In painting woodwork that has been previously painted, it is always good practice to wash thoroughly first, prepare (sandpapering, putting up holes and cracks and touching up bare and worn spots), then apply an enamel as a last coat (gloss, semi-

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gloss, eggshell, satin or dull finish). In most cases, a finish such as a low semi-gloss or eggshell gives the most pleasing finish. For many years now, it has been a desire of people to paint the woodwork the same color as the walls or to match the background of the wallpaper. In areas such as kitchens and bathrooms that are to have the ceilings and walls painted, it is best to use the same type of material (enamel) that has been mentioned above for woodwork.

In closing, it may be said that a painted surface—ceiling, wall or woodwork—may last a long time if properly cared for and washed properly. An important step in washing is not to use the soap solution too strong and to rinse after washing with a soap solution. To repeat, paint is of tremendous value from the standpoint of protection, beauty, cleanliness, light reflection, safety and health.

M. WALTER SIME

### THE HISTORY OF GLASS CONTAINERS

Glass, like sunshine, is such a basic part of everyday life that we never give it a thought. But without glass—as without sunshine—it would be a dark and barren world. There would be no window panes or electric light bulbs, no microscopes or thermometers, no mirrors or eyeglasses, no cameras, television or hundreds of other things which contribute either to the preservation or enjoyment of life.

And without glass, there would, of course, be no glass jars or bottles. Made by the billion in America today, glass containers bring us an almost endless list of foods, beverages, medicines, toiletries and household products, which we could not do without. Produced in every shape and color, and ranging in size from the tiniest medicine bottle to giant demijohns holding many gallons, these durable, transparent and attractive bottles and jars have a rich and romantic history stretching back for thousands of years.

Just when and where the first "man-made" glass was produced has never been determined. One ancient legend credits a group of Phoenician sailors with making the world's first glass. The story goes that the Phoenicians beached their boat on the sandy shores of a tidal river. Finding no rocks on which to rest their cooking pots, they

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First in a series of editorials on the subject of glass and glass containers.

MAY, 1956

used lumps of natron—a crude soda ash cleansing agent—from the ship's cargo. Fanned by sea breezes, their camp fire blazed hot. When it died the sailors found in the ashes a shiny substance which became hard when it cooled. Since two of the basic ingredients of glass are sand and soda ash, this may have been how one of man's greatest gifts—glass—was accidentally discovered. Actually, nobody knows.

It is known, however, that many thousand years before the birth of Christ, Egyptians, and possibly some of their neighbors, were producing glass which they used to glaze or coat small stones to make beads. The world's first glass containers were made in Egypt some four thousand years ago by an extremely slow and laborious process. Using metal rods, Egyptian glassmakers pulled glass threads from a cauldron of molten glass and painstakingly wound the strands around a mold formed of sand. After the glass had hardened, the sand was scraped away to leave a hollow container.

Ancient craftsmen continued to make glass jars and bottles in this slow and tedious way for hundreds of years. Finally, however, the blowpipe—a long hollow metal tube with a bell-shaped end, was invented about 300 B.C. Blowers dipped the end of the blowpipe into a molten batch, gathered up a small gob of glowing glass, and formed it into rough shape on a marble slab. Then, blowpipe to lips, the glassmaker raised the pipe about his head, twirling the glass through the air in circles to create the shape he had in mind by centrifugal force. This free-blown method obviously required great skill—as well as time and lung power! Molds were the next milestone in the long and slow evolution of glass containers. This combination of blowpipe and mold made it possible to produce more uniform and more decorative bottles, jars, flasks and other hollow ware in a fraction of the former time.

JOHN M. FOSTER, President,  
*Foster-Forbes Glass Company*

### ALCOHOL AND DRIVING

There are more than sixty pathological conditions which have some or all the symptoms of intoxication. Some time ago a police officer reported that he had followed a car for several blocks because the car was weaving. He found that the driver's speech was incoherent, and that he stag-

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Third in a series of editorials on alcoholism.

## EDITORIALS

gered. The driver insisted that he had *not* been drinking, and that if he could have a candy bar, he would be all right. He was given candy and within a few minutes he was perfectly normal. Here was a diabetic person who had had an overdose of insulin. Thus it is possible that an innocent person may be accused.

To provide definite evidence, chemical tests should be given.

The standards for indicating degrees of intoxication are usually expressed in terms of percentage of alcohol in the blood.

When alcohol is taken, it passes unchanged into the blood stream which carries it to all parts of the body in direct proportion to the water content of the tissue or organ. It is the effect upon the brain that produces the symptoms of intoxication.

Blood alcohol level:

- .02%-.20%—Stage of euphoria.
- .12%-.28%—Stage of incoordination. There is no doubt that above .15% the person is under the influence of an intoxicant.
- .24%-.40%—Stage of confusion. The man is drunk.
- .32%-.50%—Stage of complete anesthesia. Sometimes the individual will "pass out."
- .50% or over—Stage of grave danger. The individual is in danger of death.

*The American Medical Association has agreed upon standard figures as a guide to legal procedure. In some places these have been written into law. If a person has .15 per cent or more alcohol in the blood, he is unquestionably under the influence of liquor.*

PAUL S. RAHNEFF  
Citizens Commission on  
Alcoholism, Inc. of Minnesota.

## THE TREATMENT OF TUBERCULOSIS TODAY

Popular belief to the contrary, tuberculosis is not yet headed for extinction. In fact, after years of watching the steady decline in deaths from this cause, we now reach the paradoxical position of treating about the same number of patients that we were treating several decades ago. The discrepancy is more apparent than real, of course, the high prevailing incidence merely reflecting the survival nowadays of chronic cases whose disease would have proved fatal in the pre-streptomycin era. Then, too, there is the added factor of vastly improved case finding. The important thing is

that tuberculosis still constitutes a problem of no small magnitude.

Even so, there can be no questioning the claim that there has occurred more progress in the treatment of tuberculosis since 1947, the year that streptomycin became generally available, than in all previous years put together. There remain many unsolved problems, it is true, but much of the early controversy about chemotherapy has been resolved and there now exists some unanimity of opinion as to how the average fresh case of tuberculosis should be managed.

In the initial studies of streptomycin, it soon became apparent that the tubercle bacillus rather promptly grew resistant to streptomycin given alone. Quite opportunely, it was discovered that the combination of streptomycin and para-aminosalicylic acid (PAS) significantly delayed the development of bacterial resistance. Still later, it was found that twice weekly streptomycin administration was no less effective than a daily schedule, with the added advantage of further prolonging bacterial sensitivity to streptomycin though lessening the hazard of cumulative toxicity.

Isoniazid, since its availability in 1952, has earned a place alongside streptomycin and PAS. As with streptomycin, bacterial resistance invariably attends the administration of isoniazid alone, but is considerably delayed by giving streptomycin or PAS concomitantly. Current belief is that all three possible combinations of drugs, namely, streptomycin and PAS, isoniazid and PAS, and streptomycin and isoniazid are equally effective. The use of all three drugs at once seems to provide no additional benefit and is best avoided. Because of the possibility that isoniazid-pyrazinamide combination may prove to be equally if not more effective, it might be wise in the average virgin case to defer the use of isoniazid, in the event a second course of therapy should ever be necessary. This would not apply in cases of miliary or meningeal tuberculosis, where isoniazid is particularly efficacious.

The accepted dosages are: streptomycin, 1 gram intramuscularly twice weekly; PAS, 12 grams orally daily in three divided doses; isoniazid, 300 mg. orally daily in three divided doses. As yet, neither pyrazinamide nor cycloserine can be advocated because of the unresolved question of toxicity.

Ideally, treatment should be instituted early, a few weeks sometimes making a big difference be-

## EDITORIALS

cause of the necrotizing nature of the infection. Treatment should be continuous, for interrupted therapy tends to increase bacterial resistance. Treatment must be prolonged or reactivation may ensue. For practical purposes, it can be said that chemotherapy should be continued for at least six months after all lesions can be classed inactive, that is, six months after serial x-rays indicate stability, planigrams show closure of all cavities and the sputum is consistently negative for tubercle bacilli.

Other measures deserve comment. Bed rest, once the keystone of antituberculous therapy, should be used with prudence. Certainly, in the acute phase of the disease complete rest is indispensable, leading to a reduction in fever, cough and expectoration. Conversely, once symptoms subside, an overly rigid attitude toward bed rest may promote discontent without contributing significantly to treatment. At the opposite extreme, the so-called ambulatory treatment of the tuberculous patient, while reducing the disability period and hospital expense, may also reduce the chance for cure.

Collapse measures, such as pneumothorax, pneumoperitoneum and phrenic nerve crush, seem to have a steadily diminishing value, being at this time of more historical than practical importance. Thoracoplasty is still a good operation with a high rate of cavity closure in selected cases. In general, however, outside of chemotherapy excisional surgery stands out as perhaps the most important ancillary measure in the treatment of the disease. By resecting diseased tissue, especially cavitary disease, permanent arrest of the infection may be assured. In essence, surgery is utilized for any dangerous residua of chemotherapy.

As emphasized elsewhere, "the secret to the successful management of the patient with pulmonary tuberculosis lies not in any one drug, nor in any one surgical feat, nor in any one therapeutic dictum, but in the carefully planned and integrated use of all these many measures under the joint supervision of the internist, bacteriologist and surgeon working with the closest possible co-ordination."†

J. WINTHROP PEABODY, SR., M.D.

†Peabody, J. W., Sr., Katz, S., Davis, E. W., and Peabody, J. W., Jr.: Current concepts in the management of pulmonary tuberculosis. *J. Am. Ger. Soc.*, 3:566 (Aug.) 1955.

MAY, 1956

## READER INTEREST POLL

At this year's Minnesota State Medical Association's meeting in Rochester, MINNESOTA MEDICINE will have a booth devoted to a *Reader Interest Poll*. The purpose of the poll is to learn how this journal can improve its service to its readers. MINNESOTA MEDICINE is your journal, so you have a strong motive to seek out this booth and let us have five minutes of your time to record your opinions about the journal.

The poll will be conducted by professional pollsters from the Department of Journalism of the University of Minnesota and will cost you money . . . even if indirectly. That gives you an additional motive to visit the polling booth; i.e., to make sure that you are getting your money's worth.

Give us the benefit of your opinions at the Rochester meeting.

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## ELECTROLYTE DISTURBANCES IN DEHYDRATION

(Continued from Page 293)

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The importance of environmental factors upon morbidity and mortality of tuberculosis has long been recognized. In a disease where the invasive powers of the agent are in such delicate balance with resistance of the host, factors which substantially augment the virulence of the causative organisms or depress the resistance of the host logically will determine the trends of the disease.—ALTON S. POPE, M.D., and JOHN E. GORDON, M.D., *American Journal of Medical Sciences*, September, 1955.

# President's Letter

## A TRIBUTE TO ORGANIZED MEDICINE

A few days hence we shall be gathering at Rochester for the 103rd Annual Meeting of the Minnesota State Medical Association.

To most of us this is primarily a scientific meeting, providing an opportunity to bring ourselves up to date on medical knowledge and equipment, but the meeting also provides some 100 commercial exhibits where you can see and study the latest in equipment, drugs and techniques. For your relaxation, there are special society luncheons and dinners and the usual assortment of sports events on the Sunday preceding the meeting.

This is what the annual meeting means to most of us. We have splendid meetings, and Minnesota can justly be proud of their caliber. But I wonder whether we ever give much thought to another side of our annual meeting.

Have we ever realized and appreciated the months of organization and preparation that the committee on local arrangements of the host city must engage in so that everything runs smoothly? Do we ever think of the effort put forth by Executive Secretary Rosell and his staff in providing the exhibits which are so vital to the financial success or failure of such a meeting?

Do we realize how much easier it makes the job of selling exhibition space if we stop to register with the exhibitors?

Do you realize that the Council and officers of the Association arrive on the scene the Saturday preceding the meeting; that from then until the close of the session they are in almost continuous session, usually starting with a 7 a.m. breakfast?

Do you appreciate the fact that the reference committees meet at 10 a.m. on the Sunday preceding the meeting?

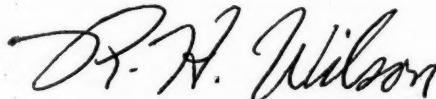
To the House of Delegates, the annual meeting means two long sessions on Sunday preceding the meeting and another one on Monday, and, believe me, those chairs get harder and harder!

Do you set aside time at your succeeding component society meeting for your delegate to make a report so that you may be kept informed on current problems, or do you make him fight for a few minutes' time? I was a delegate for fifteen years from my component society and I am embarrassed to state how few times I was asked or given the opportunity to make a report.

So much for the annual meeting. There is much more to organized medicine in Minnesota and every other state. Do you know that there are twenty-three state scientific committees with a total of 239 devoted men serving on them, giving freely of their time and knowledge that the people of Minnesota might have better health?

In addition, there are approximately twenty-five non-scientific committees with a total of 190 members. These committees are concerned with editing and publishing our journal, with medical economics, medical relations, malpractice insurance, physicians' assistance, and numerous other phases of organized medicine. Mention must also be made of the fine group of men who over the years have given so generously of their time and talents in representing us as delegates to the two annual meetings of the American Medical Association and meetings of national committees on which they serve.

This letter is not meant to be critical, but rather as a tribute and expression of appreciation of the time and talents all of these members have so graciously and devotedly given to the cause of organized medicine. Their only reward is the satisfaction of a most worthy job well done.



President, Minnesota State Medical Association

# Medical Economics

Edited by the  
Committee on Medical Economics,  
Minnesota State Medical Association  
George Earl, M.D., Chairman

## ADMINISTRATION OPPOSES DISABILITY PAYMENTS UNDER SOCIAL SECURITY

The Eisenhower administration is firmly opposed to two major provisions of the House-approved social security amendments (H. R. 7225, summarized in the January, 1956, section on "Medical Economics"). These provisions are the lowering of the retirement age for women, from sixty-five to sixty-two and cash payments to disabled workers at age fifty. The position was set forth March 22 by HEW Secretary Folsom, the 101st and final witness to appear before the Senate Finance Committee since last January.

Folsom said that the medical testimony presented on the difficult problem of determining eligibility for disability payments, in his judgment, was very convincing.

He also stated:

"The nation has already made significant progress in recent years in helping the disabled. About 244,000 needy disabled persons are now receiving payments of \$165 million annually. Under the present system, cash payments are made only upon death or retirement. These conditions are easy to determine.

"Under the disability proposal, however, the primary condition for payment would be 'inability to engage in any substantial gainful activity, or mental impairment which can be expected to result in death or to be of long continued and indefinite duration.' These conditions are much more difficult to determine.

". . . Numerous medical witnesses have testified to this committee as to the great problems which they foresee in evaluating physical and mental conditions for purposes of disability determinations. I believe the testimony of so many medical experts as to the problems involved in determining disability must be given considerable weight."

## Difficulties in Controlling Cost

Folsom went on to discuss the uncertainties of the cost of such a program. He pointed out that the "cost estimates for disability are subject to a far wider range of variation than for other types of benefits."

"It would also be possible," he added, "that the age limit of 50 could be lowered and that cash disability benefits at any age would cost social security taxpayers almost \$1½ billion a year by 1980."

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## Relationship to Vocational Rehabilitation

In discussing the relationship of cash disability benefits to vocational rehabilitation, Folsom said he believed that the latter was the most constructive approach to disability. He added:

"Witnesses have testified that cash benefits may reduce the incentive of some disabled persons toward rehabilitation—particularly if the benefits, when combined with other resources, adequately meet essential needs.

"Our own experience with the rehabilitation process," he said, "indicates that the drive and will-power of the individual is the most important single factor in determining his chances of successful rehabilitation. The committee is faced with a proposal for legislation in a delicate area of human motivation. It is impossible to proceed with the same degree of assurance that has accompanied other steps in the expansion of the social security system."

Summarizing his objections Folsom said:

"There is a great divergence of opinion on the difficulties of administering a cash disability program, our ability to control the costs and the effects on vocational rehabilitation. On the other hand, we are making significant progress in helping disabled people—through assistance payments to the needy, the rehabilitation program and the disability freeze. We need more time to develop these programs fully and to evaluate their results."

## Opposition to Lowering Retirement Age for Women

Referring to the section in the bill lowering the retirement age for women, Mr. Folsom noted that this would cost about \$400 million the first full year and more than \$1 billion annually by 1970. The proposal has been considered carefully several times in the past twenty years, but "Congress has always concluded that any overall values of a lower retirement age were outweighed by the heavy cost. And there has been a serious question as to the logic of a discrimination in retirement age between women and men."

## Writing Your Congressman

Physicians are urged to continue writing thoughtful letters to their congressmen on their objections to H.R. 7225, although it is believed the Senate Finance Committee will go slow on Social Security revisions and that floor action will not come until midsummer.

## MEDICAL ECONOMICS

On this and other issues, doctors have had a number of reasons in recent years to take special interest in their congressmen. The health question has certainly made taxes and defense, for example, items of conversation, and congressional study of almost secondary political importance. Physicians throughout the nation should express themselves from time to time on matters that concern them and their patients. As a practitioner, he has a right, too, to demand things that best enable him to practice the type of medicine for which he has trained and devoted himself.

The Hoover Report Division of the Taxpayers' Federation of Illinois has issued a small pamphlet in which are suggested certain rules for writing your congressman if the letters are to have the most effect:

1. Write on a specific issue or principle, and do not try to cover more than one in a letter.
2. Be brief. Tell your point of view and your reasons.
3. Do not follow a form letter. Give your own ideas in your own way. It is the straightforward, sincere letter that commands attention.
4. Be friendly and courteous. Do not be abusive.
5. Do not use carbon copies. Write to each one individually.
6. Write a "thank you" note when one of these men does something you like. They are often criticized, seldom praised.
7. Be sure to sign your letter legibly and give your address.

### ARE DOCTORS GOOD BUSINESSMEN?

The 1955 study on "What Americans Think of the Medical Profession" reveals that over 50 per cent of the general physicians polled believe that they themselves are not good businessmen. Fifty-two per cent of the internal medical specialists, 54 per cent of the surgeons and 58 per cent of other specialists agreed.

On the other hand, only 10 per cent of the men in the lay group surveyed said they believe it was "true" that doctors were poor businessmen. Eight per cent said it was "possibly true"; 38 per cent said "false," and 10 per cent said it was "probably false."

A total of 81 per cent of physicians believe they are poor businessmen; 13 per cent disagreed, and 6 per cent had no opinion.

Of the general public questioned, a total of

17 per cent believed doctors are not good businessmen; 48 per cent disagreed. The remaining had no opinion.

Reasons the overwhelming majority of physicians gave for believing they are not good businessmen were listed in this order: "They are too busy; they stay out of business because they become 'easy marks'; they are not trained in business; too many collections, poor records and poor management; they are interested only in medicine; it takes too much experience and observation; they don't think about money; they're too softhearted and don't always charge; most of them are not wealthy; they leave small estates and many debts; they let others handle their business; they are not business-like with patients."

The doctors who believed they *are* good businessmen gave these reasons for their opinions: "they have investments; they live well and are successful; the manner in which most keep collections and records is good; they are intelligent and educated; they make money and generally have good incomes; they have good personal knowledge."

Those laymen who believe doctors are poor businessmen gave these reasons for their answers: "doctors are too busy, too interested in medicine only; they are weak managers and have poor records; they are not trained in business; they let others handle their business; they are not business-like with patients; they are soft-hearted and don't charge; they don't think much about money."

The 48 per cent of the general public who believe physicians *are* good businessmen say they have this idea because "doctors live well and are successful; they are intelligent, capable and educated; they make money and have big incomes; they are businesslike in their billing and collecting; they have investments and many material possessions; they are busy and have many patients and they charge high fees."

### WHAT DO DOCTORS THINK OF SOCIAL SECURITY?

In state surveys made in various parts of the country, the number of doctors who believe in compulsory social security for the profession is less than 10 per cent.

The largest poll tabulated up to February was that taken by the Ohio State Medical Association. Ballots were sent to 8,360 members. The main question was: "Do you favor extension of Old

## MEDICAL ECONOMICS

Age and Survivors' Benefits coverage of the Federal Social Security Program to Physicians?" The ballot was accompanied by material prepared by the affirmative and negative sides. There were 4,912 ballots returned (about 60 per cent). Of these, twelve could not be tabulated because of irregularity of answers. Of the remaining 4,900, nearly one-half, 2,441, voted "no," indicating that they did not want social security under any circumstance.

Of the 2,459 favoring some form of coverage, 2,070 said they wanted it on a voluntary basis. Only 370 were in favor of compulsory coverage.

In Indiana, on the basis of 2,333 replies to 3,613 questionnaires sent out by the Indiana State Medical Association, there were 703 doctors who were for some form of social security. Of these, 579 gave their assent to such coverage, provided it was voluntary. Only ninety-one wanted a compulsory program.

The Rhode Island Medical Society and Providence Medical Association polled 800 members. Usable returns were received from 450. Opposition to any form of social security totaled 152. Those favoring a voluntary system numbered 264. Only thirty-four voted for a compulsory program.

The Arkansas Medical Society sent out about 1,200 questionnaires and to the end of January had 836 usable replies. There were 785 votes against a compulsory program. Of these, 411 doctors were agreeable to a voluntary coverage, but 374 wanted no part of social security. The proponents of a compulsory plan numbered fifty-one.

The AMA has consistently opposed the inclusion of physicians in any social security program on a compulsory basis. It has stated that it will not oppose an amendment permitting voluntary participation.

A poll of Minnesota physicians is now being conducted on the same subject. It is believed that the survey will probably confirm the findings in other states.

### CATASTROPHIC HEALTH INSURANCE FOR FEDERAL EMPLOYEES

The administration is about ready to present to Congress its program for major medical cost insurance for the 2,000,000 U. S. civilian employees and their 2,500,000 dependents. All U. S. employees and dependents who are participating in the two-year-old federal group life insurance program would receive this catastrophic health

insurance protection at no cost to themselves. The entire cost—about \$32½ million annually—would be paid by the United States.

To varying degrees, hospital, surgical and medical care costs would be covered. The major medical care benefits, however, would not apply until \$500 of hospital costs were paid annually by the employe. After that the United States policy would meet 75 per cent of the cost. The employe would be reimbursed for 75 per cent of all surgical costs after he had paid the first \$250. He would be expected annually to stand the first \$100 and would be reimbursed for 75 per cent of the remainder. The assumption is that in most cases the employe would protect himself against these initial payments by purchase of basic health insurance.

### MEDICAL LIBRARY BILL

Senator Hill, (D., Ala), with Senator Kennedy, (D., Mass.), as co-sponsor, has introduced a bill taking the Armed Forces Medical Library from under the Defense Department and setting it up as a separate entity with the name of "National Library of Medicine." They left open the question of whether to place it under the Smithsonian Institution as recommended by the Hoover Commission or under some other agency such as the Department of HEW. One of the points cited by Senator Hill for the bill is that the present library, with its wealth of material, provides considerable information for civilian medical science. Senator Kennedy stressed that the library cannot compete for funds in the Defense Department against the needs and demands of national defense. The bill has been referred to the Senate Labor and Public Welfare Committee, which has no immediate plans for hearings.

The AMA's House of Delegates in June, 1954, urged a new building for the present library and called on the government to give it "immediate priority."

### SOME DOCTORS MISS THIS TREAT

The 75 per cent of doctors in general practice who disagreed with the statement, "Compared with their patients, most doctors make too much money" in the poll, "What Americans Think of the Medical Profession," last year apparently agree with the statement that "wealthy doctors, like all wealthy people, miss one of the greatest thrills in life—paying off that last installment!"

# The Dean's Page

## LEADERSHIP IN MEDICINE

A recent issue of the new *University of Minnesota Medical Bulletin* points out some interesting information concerning alumni of our Medical School. From time to time, the *Bulletin* carries news items concerning our alumni. It has been apparent from these news items that a good many of our alumni occupy positions of importance medically in many parts of this country. It has been particularly impressive, however, to note the manner in which our graduates have become active leaders of medicine in Minnesota.

At the present time, the President, the immediate Past President, both Vice Presidents, the Secretary, the Treasurer, the Speaker of the House of Delegates, and the Chairman of the Council of the Minnesota State Medical Association are alumni of our Medical School. All of the newly installed officers, as well as the out-going president, and the new directors of the Minnesota Academy of General Practice also graduated from Minnesota, as did the new officers of the Southern Minnesota Medical Association and the incoming and retiring presidents of the Northern Minnesota Medical Association. Our alumni have been instrumental in the development and activities of a number of other important medical organizations in this state.

Our entire faculty takes justifiable pride in this record. We believe that it shows that our alumni have not only practiced an excellent brand of medicine but that, in addition, they have assumed their share or more of leadership in the medical community.

HAROLD S. DIEHL, *Dean*  
*University of Minnesota Medical School*

# In Memoriam

## GUSTAF A. HEDBERG

Dr. Gustaf A. Hedberg, medical director of Nopeming Sanatorium, Nopeming, Minnesota, died March 27, 1956, at Tallahassee, Florida. He was forty-nine years old.

An authority on tuberculosis treatment and control, he was awarded the 1955 Dearholt medal for outstanding service in tuberculosis control at the Mississippi Valley Conference on tuberculosis last October.

He is credited with originating the first mobile x-ray unit for tuberculosis survey in 1943. He is also credited with using new drugs to shorten tuberculosis treatment.

Dr. Hedberg joined the Nopeming staff shortly after he received his medical degree from the University of Minnesota in 1930.

He was a member of the St. Louis County Medical Society, the Minnesota State Medical Association, the American Medical Association, the National Tuberculosis Association, the American Sanatorium Association, the Minnesota Trudeau Society and the Duluth Society of Internal Medicine.

Survivors include his wife, Iris; two daughters, Susan and Karen, both of Nopeming; two sisters, Mrs. Carl Blad, Saint Paul Park, and Mrs. John E. Ross, Minneapolis, and a brother, Robert, El Sobrante, California.

## HENRY N. KLEIN

Dr. Henry N. Klein, former chief of staff of Saint Joseph's Hospital, Saint Paul, died April 16, 1956, after a long illness.

Dr. Klein practiced medicine for fifty years and served on the staffs of Saint John's, Ancker, Miller and Saint Luke's Hospitals and the Wilder Dispensary.

He was graduated from the University of Minnesota Medical School and held membership in the Ramsey County Medical Society, the Minnesota State Medical Association and the American Medical Association.

A member of the University Club and a veteran of both the Spanish-American War and World War I, Dr. Klein also served as head of the dermatology department at the Wilder Dispensary.

Survivors include his wife, Josephine E.; a son, Richard E., and three grandchildren, all of Saint Paul.

## SCOTT G. LARRABEE

Dr. Scott G. Larrabee, a Saint Paul eye, ear, nose and throat specialist for thirty-three years, died April 2, 1956. He was seventy-one years old.

Born in Scarborough, Maine, he was a graduate of Bowdoin University in his home state. Dr. Larrabee lived at 1880 Igelhart Avenue, Saint Paul.

Survivors include his wife, Nellie; a daughter, Mrs. George T. Hammond, and three grandchildren, all of Saint Paul, and two brothers, Alvin, Detroit, Michigan, and Ralph, who still lives in Maine.

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## HENRY H. LEAVITT

Dr. Henry H. Leavitt, a Minneapolis physician fifty-eight years, died March 18, 1956. He was ninety-four years old.

A native of Waterloo, Iowa, he was the oldest living graduate of Beloit College, Beloit, Wisconsin. He also graduated from Chicago Homeopathic Medical College, came to Minneapolis in 1890 and taught medicine at the University of Minnesota before entering private practice. He retired in 1948. During his retirement, he lived in Phoenix, Arizona, until 1954.

Dr. Leavitt was a general practitioner for many years before specializing in eye, ear, nose and throat medicine.

He was a member of the Hennepin County Medical Society, the Minnesota State Medical Association and the American Medical Association.

Survivors include three daughters: Mrs. R. M. Bell and Mrs. N. S. Mitchell, Minneapolis, and Mrs. M. N. Clark, Oakland, California. Mrs. Leavitt died in 1954.

## JOSEPH A. LEBROWSKE

Dr. Joseph A. Lebrowske, pioneer Minneapolis physician, died April 1, 1956. He was seventy-five years old.

Born in Russia, Dr. Lebrowske received his early education in Minneapolis and graduated from the Minneapolis College of Physicians and Surgeons, formerly affiliated with Hamline University.

The Hennepin County Medical Society, of which Dr. Lebrowske was a member, recently honored him for fifty years of service. He was also a member of the Minnesota State Medical Association, the American Medical Association, the Keneseth Israel Synagogue and the Woodmen of the World.

Survivors include his wife, Florence; two sons, Bernard, Westport, Connecticut, and Harold, Saint Paul; four daughters, Mrs. David Smith, Los Angeles, California, and Mrs. Martin Yavitz, Mrs. Samuel Held and Mrs. Wilbur Jansen, Minneapolis; and two sisters, Mrs. Ida Hoffman, Minneapolis, and Mrs. Israel Lazarus, Milwaukee, Wisconsin.

## FLETCHER W. PENHALL

Dr. Fletcher W. Penhall, a pioneer physician in Morton, Minnesota, died April 2, 1956, at Redwood Falls. He was ninety-three years old.

One of Minnesota's oldest practicing physicians, he retired a year ago after serving the people of Morton for fifty-three years.

Dr. Penhall set up practice in Morton in 1891 after graduating from Bellevue Medical Center in New York. He was born in Brooklin, Ontario, Canada, and took his first medical training at Trinity Medical College, Toronto.

A member of the staff at Willmar State Hospital, Dr. Penhall also served on the Morton Village Council for three years and on the Board of Education for fifteen

## IN MEMORIAM

years. He was a former president of the Camp Release Medical Society, a member of the Renville-Redwood County Medical Society, the Minnesota State Medical Association and the American Medical Association.

Survivors include four daughters: Mrs. John Allen, Mrs. Glenden Judd and Lillith Penhall, Minneapolis, and Mrs. Irving Eustis, Florida. Two other daughters preceded him in death. Lillian, died in 1899, and Jessie, in 1952. Mrs. Penhall died in 1942.

### IVAR SIVERTSEN

Dr. Ivar Sivertsen, a Minneapolis physician and surgeon for fifty-one years, died March 17, 1956. He was seventy-nine years old.

Born in Christiansund, Norway, Dr. Sivertsen graduated from Hamline University medical school in 1904. After internship in St. Joseph's Hospital, Saint Paul, he continued his medical studies in Vienna, Austria.

He later taught obstetrics and gynecology at the University of Minnesota.

Dr. Sivertsen retired from medical practice last July. He was one of the original staff members of Fairview Hospital. Earlier this year, he retired from the State Board of Medical Examiners, to which he had been appointed in 1931.

He was also a founder of Central Lutheran church, a charter member of the Minneapolis Club and a Shriner. He served as an army captain during World War I.

A member of the founders' group of the American Board of Surgery, Dr. Sivertsen was also a fellow of the American College of Surgeons, a member of the Hennepin County Medical Society, the Minnesota State Medical Association and the American Medical Association.

Survivors include his wife, Maybelle; two sons, Ivar, Jr., San Jose, California, and John W., Akron, Ohio; three daughters, Wilma Clare, New York, and Anne and Mrs. Margaret Larson, both of Minneapolis, and two brothers, Dr. Andrew and John A., both of Minneapolis.

### JOHN E. SOPER

Dr. John E. Soper, Minneapolis, died March 24, 1956. He was eighty-nine years old.

Dr. Soper, a University of Minnesota graduate, was captain of the 151st Field Artillery medical corps in World War I. He was chairman of the National Cemetery Association; chairman of Soldiers Home Committee; national vice president of Rainbow Division Association; Spanish War Veterans, and Sons of Union Veterans. He was also active in American Legion, DAV and VFW activities and was a past exalted ruler of Elk Lodge 44 and a member of Lynnhurst Masonic Lodge.

He practiced medicine in Norwood and Delano, Minnesota, for twenty-one years and served as mayor of Norwood and as Carver County coroner.

Surviving is his wife, Mildred E. Soper.

### GREGORY VAN BEECK

Dr. Gregory Van Beeck, a native of Hastings, Minnesota, died March 13, 1956, in Big Springs, Texas. He was sixty-five years old.

Dr. Van Beeck graduated from the University of Minnesota medical school and practiced for two years at Mazeppa, Minnesota. He later entered the United States Public Health Service and was assigned to posts all over the United States, Europe and Central America.

Eight months ago, he resigned his position as medical director of the Public Health Service.

Funeral services were held in Hastings, March 19.

Survivors include his wife, Margaret; a brother, Clemens, and a cousin, Mrs. Nick Conzemius, both of Hastings.

### HENRY JOURNEYAY WELLES

Dr. H. Journeyay Welles, former deputy coroner of Hennepin County, died February 26, 1956, in Minneapolis. He was eighty years old.

Dr. Welles was deputy coroner from 1943 to 1953.

A 1901 graduate of the University of Minnesota medical school, he practiced medicine in Minneapolis fifty-five years. He was a member of the Hennepin County Medical Society and the Minnesota State Medical Association.

Dr. Welles was a past president of Zuhrah Shrine patrol and a member of Alpha Delta Phi and Phi Beta Pi fraternities.

Survivors include his wife, Bess, and a daughter, Betty.

### WILLIAM E. WRAY

Dr. William E. Wray, physician at Campbell, Minnesota, for forty-four years, died February 26, 1956, in Breckinridge. He was seventy-seven years old.

He was a graduate of the University of Illinois medical school, class of 1897. After graduation, Dr. Wray served one year in the medical corps of the U. S. Army during the Spanish-American War. During World War I, he served as a major in the 155th Coast Artillery.

A member of the staff of St. Francis Hospital, Breckinridge, and the Lake Region Hospital, Fergus Falls, he also served as civil defense chairman for his community and as a member of the Red Cross board. He was a member of the Campbell school board for many years, a member of the Masonic Lodge of Campbell, the VFW, and the American Legion.

Dr. Wray belonged to the Park Region District and County Medical Society, the Minnesota State Medical Association and the American Medical Association.

In 1947, staff members of St. Francis Hospital, Breckinridge, and their wives honored Dr. Wray at a banquet on the occasion of his completion of fifty years of medical service.

Survivors include his daughter, Dorothy; his sister, Mrs. R. S. Cheney, Kerrville, Texas; and his brother, Edward, Evanston, Illinois. A son, William Edgar, preceded him in death in 1922 and Mrs. Wray died January 15, 1956.

# Meetings and Announcements

## MEDICAL MEETINGS

### State

**MINNESOTA STATE MEDICAL ASSOCIATION**, annual meeting, Mayo Civic Auditorium, Rochester, May 21-23, 1956.

**Minnesota Society of Obstetrics and Gynecology**, fall meeting, Rochester, Minnesota, September 22. Dr. Edward A. Banner, secretary, Rochester, Minnesota.

**Northwest Pediatric Society**, spring meeting, Rochester, May 22, in conjunction with meeting of Minnesota State Medical Association. Secretary, Dr. T. C. Papermaster, Minneapolis.

### National

**American Association of Blood Banks**, ninth annual meeting, Somerset Hotel, Boston, Massachusetts, September 3-5. Secretary Marjorie Saunders, 725 Doctors Building, 3707 Gaston Ave., Dallas, Texas.

**American Cancer Society and National Cancer Institute**, Third National Cancer Conference, Sheraton-Cadillac Hotel, Detroit, Michigan, June 4-6. Write National Cancer Conferences Coordinator, American Cancer Society, 521 West 57th Street, New York 19, New York.

**American Ophthalmological Society**, Hot Springs, Virginia, May 31 to June 2.

**Medical Library Association**, fifty-fifth annual meeting, Hotel Statler, Los Angeles, California, June 18-22. Write Mrs. Ella Crandall, Librarian, Los Angeles County General Hospital, 1200 North State Street, Los Angeles 33, California.

**Microbiological Institute**, ninth annual meeting, Department of Biological Sciences, Purdue University, Lafayette, Indiana, June 4-9. Write Division of Adult Education, Engineering Administration Building, Purdue University, Lafayette, Indiana.

**Minnesota-Dakota-Manitoba Orthopedic Society**, annual meeting, Red Wing, Minnesota, September 7 and 8. Dr. Hollis Ahlrin, secretary, Rapid City, South Dakota.

**Symposium for General Practitioners on Tuberculosis and Other Chronic Pulmonary Diseases**, fifth annual meeting, Saranac Lake, New York, July 7-13. Dr. Edward N. Packard, general chairman, Symposium for General Practitioners, P.O. Box 262, Saranac Lake, New York.

**Third National Cancer Conference**, Detroit, Michigan, June 4-6.

**West Virginia State Medical Association**, 89th annual meeting, The Greenbrier, White Sulphur Springs, West Virginia, August 23-25.

### International

**Canadian Medical Association**, Quebec, P.Q., Canada, June 10-14. Dr. Arthur D. Kelly, secretary, 150 St. George St., Toronto 5, Ontario, Canada.

**Congress of International Society of Hematology**, Hotel Somerset, Boston, Massachusetts, August 27-September 1. Dr. W. C. Moloney, secretary, 39 Bay State Road, Boston, Massachusetts.

**European Congress of Cardiology**, Stockholm, Sweden, September 10-14. Dr. Karl E. Grewin, secretary, Söder-sjukhuset, Stockholm, Sweden.

**Inter-American Congress of Cardiology**, Havana, Cuba, November 4-10. Dr. Ramon Aixala, Apartado 2108, Havana, Cuba.

**International College of Surgeons**, European meetings: Paris, May 10; Nantes, May 14; Berne, May 17; Rome, May 23; Vienna, May 30.

**International Congress of Clinical Chemistry**, Hotel New Yorker, New York, September 9-14. Secretary, John G. Reinhold, 711 Maloney Building, University of Pennsylvania, Philadelphia 4, Pennsylvania.

**International Congress of Gastroenterology**, London, England, July 18-21. Herman Taylor, secretary, London Hospital, White Chapel, London E. 1, England.

**International Congress of Internal Medicine**, Madrid, Spain, September 19-23. Dr. J. C. DeOya, secretary, No. 90, Madrid, Spain.

**International Congress of International College of Surgeons**, Palmer House, Chicago, Illinois, September 9-13. Dr. Max Thorek, secretary general, 1516 Lake Shore Drive, Chicago, Illinois.

**International Congress of Radiology**, Mexico, D. F., Mexico, July 22-28. Dr. Jose Noriega, secretary, Tepic 126 (2 e piso), Mexico, D. F. 7, Mexico.

**International Congress of World Confederation for Physical Therapy**, Statler Hotel, New York, New York, June 17-23. Mildred Elson, American Physical Therapy Association, 1790 Broadway, New York 19, New York.

**International Congress on Diseases of the Chest**, Cologne, Germany, August 19-23. Murray Kornfeld, executive director, 112 East Chestnut St., Chicago 11, Illinois.

**Pan American Congress on Cancer Cytology**, Miami, Florida, January 8-12, 1957. Dr. J. Ernest Ayre, chairman, 1155 N. W. 14th St., Miami, Florida.

**World Medical Association**, Havana, Cuba, October 9-15. Dr. Louis H. Bauer, secretary general, 345 East 46th St., New York 17, New York.

## MEETINGS AND ANNOUNCEMENTS

### AMERICAN CANCER SOCIETY FELLOWSHIPS

The American Cancer Society has announced that its program of clinical fellowships, which began in 1948, will continue through the institutional years, July 1, 1957 to June 30, 1958, with fellowships commencing July 1, 1957. Applications for fellowships should be sent to Dr. Brewster S. Miller, American Cancer Society, 521 West 57th Street, New York 19, New York, via the executive officer of the teaching institution.

### AMERICAN COLLEGE OF GASTROENTEROLOGY ANNOUNCES WRITING CONTEST

The American College of Gastroenterology, in co-operation with the Ames Company of Elkhart, Indiana, announces the 1956 Ames Award contest for the best papers in gastroenterology.

For fellows in gastroenterology, residents and interns the first prize will be \$500, with a second prize of \$250. In addition a prize of \$250 will be given for the best paper published in the *American Journal of Gastroenterology* during the year ending June 30. Papers must be submitted before July 15.

For further information, write the American College of Gastroenterology, 33 West 60th Street, New York 23, New York.

### MINNESOTA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

New officers of the Minnesota Academy of Ophthalmology and Otolaryngology for 1956-1957 are Dr. Karl E. Sandt, Minneapolis, president; Dr. John Peterson, Duluth, first vice president; Dr. John Erick, Rochester, second vice president; Dr. Malcolm McCannel, Minneapolis, secretary-treasurer.

Chairman of the council is Dr. George Tangen, Minneapolis, and members of the council include Dr. John Wendland, Dr. Walter Fink, Dr. Sandt and Dr. McCannel, all of Minneapolis; Dr. Frank Adair, St. Paul, and Dr. Hobart Johnson, Mankato.

The organization meets on the second Friday of the month from November to May, alternating between the Minneapolis Club in Minneapolis and the Minnesota Club in St. Paul.

### CAMP COURAGE OPENS IN JUNE

Camp Courage, Minnesota's only camp especially designed for physically handicapped children and adults, opens its second season June 17.

The camp is maintained by the Minnesota Society for Crippled Children and Adults (the Easter Seal Society). Located on Cedar Lake, about four miles northwest of Minneapolis, it offers regular activities as well as speech and physical therapy on recommendation from a physician. A trained occupational therapist administers the arts and crafts program.

The camp is open to all types of physically handicapped children and adults, including those who are blind, deaf or have speech problems. Minimum age is eight. At present, the camp is not accepting children who are mentally retarded or emotionally disturbed. Epileptics, diabetics and enuretics are screened and evaluated on individual merit by an admissions committee upon medical recommendation. No one is ever refused admission because of race, creed, color or inability to pay.

Physicians knowing prospective campers should contact their local Easter Seal chairman or Toy Jambeck, Camp Director, Easter Seal Society, 1639 Hennepin Ave., Minneapolis 3, Minnesota.

## MEETINGS AND ANNOUNCEMENTS

### Woman's Auxiliary

#### BABY SITTER PROJECT FOR ST. LOUIS COUNTY AUXILIARY

##### Mrs. L. J. Leonard

A Duluth project which stimulated considerable interest was presented by Mrs. H. E. Bakkila during the Mid-Winter Board meeting in Saint Paul.

The Home Safety Committee of the Duluth Woman's Institute formed a Baby Sitters' Council in 1950 to meet the need to educate baby sitters in safety matters. The St. Louis County Medical Auxiliary was approached with the problem and agreed to participate in the program.

The Auxiliary supplied printed cards, about 8 x 12 inches, in the form of a bulletin which could be tacked on the wall of the home in a conspicuous spot. This card gave these six emergency facts in bold type—with proper telephone numbers and other instructions:

1. Parents' name and address where they could be reached; also where else to get help in emergencies.
2. Serious injury to the baby.
3. Fire.
4. Sudden sickness.
5. Choking.
6. Gas, water or light failure.

These cards were given to all attending the annual Baby Sitters' workshops which have been held since 1950.

From a group of 180 at the first workshop, the number has increased to the point where the last two meetings have been held at the Shrine auditorium. Attending was a capacity-size group of baby sitters and interested adults.

Stunts, movies, door prizes and group singing have been added to the programs to stimulate interest.

By constant repetition of safety rules, the sponsors hope to train more competent and more responsible baby sitters.

Inquiries on the operation of this plan have been received from all over the United States.

Members of the St. Louis County Auxiliary are to be commended for their participation in this program and for their contribution to its success.

#### NATIONAL CONVENTION

Mrs. G. E. Harmon, State Auxiliary Publicity Chairman, has received a letter from Margaret Wolf, national Executive Secretary, extending a cordial invitation to Auxiliary members to participate in all social functions and Auxiliary sessions of the national convention, June 11-15, in Chicago. Headquarters will be at the Conrad-Hilton Hotel. Tickets for all functions will be available only at the registration desk. There will be a hospitality room in the Normandy Lounge.

Mrs. Harmon has studied the program and states that it looks very interesting and most worthwhile.

# Minnesota State Medical Association

## Roster for 1956

### Officers

R. H. WILSON, M.D.	President	Winona
GORDON C. MACRAE, M.D.	First Vice President	Duluth
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<b>Seventh District</b>	
W. E. FITZSIMONS, M.D.....Brainerd	
<b>Eighth District</b>	
C. W. JACOBSON, M.D.....Breckenridge	
<b>Ninth District</b>	
J. K. BUTLER, M.D.....Cloquet	
<b>RURAL MEDICAL SCHOLARSHIP COMMITTEE</b>	
F. J. ELIAS, M.D.....Duluth	
C. G. SHEPPARD, M.D.....Hutchinson	
E. J. SIMONS, M.D.....Saint Paul	
<b>UNIVERSITY RELATIONS</b>	
A. O. SWENSON, M.D.....Duluth	
O. J. CAMPBELL, M.D.....Minneapolis	
CHAS. C. COOPER, M.D.....Saint Paul	
F. J. ELIAS, M.D.....Duluth	
JUSTUS OHAGE, M.D.....Saint Paul	
<b>COMMITTEE ON VETERANS AFFAIRS</b>	
ALVAN SACH-ROWITZ, M.D.....Moose Lake	
A. ERICKSON, M.D.....Long Prairie	
J. J. EUSTERMANN, M.D.....Mankato	
<b>AMERICAN MEDICAL EDUCATION FOUNDATION COMMITTEE</b>	
C. E. REA, M.D., <i>Chairman</i> .....Saint Paul	
First Councilor District.....W. A. MERRITT, M.D., Rochester	
Second Councilor District.....MAURICE D. COOPER, M.D., Winnebago	
Third Councilor District.....A. W. DIESSNER, M.D., Redwood Falls	
Fourth Councilor District.....JOHN J. EUSTERMANN, M.D., Mankato	
Fifth Councilor District.....JOSEPH L. SPRAFKA, M.D., Saint Paul	
Sixth Councilor District.....CHARLES A. NEUMEISTER, M.D., Minneapolis	
Seventh Councilor District.....WILFORD J. DEWEENE, M.D., Bemidji	
Eighth Councilor District.....M. D. STAREKOW, M.D., Thief River Falls	
Ninth Councilor District.....R. T. SEASHORE, M.D., Duluth	

## Councilor Districts

### FIRST DISTRICT

J. M. STICKNEY, M.D.....Rochester  
Counties—Dodge, Fillmore, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Wabasha, Winona

### SECOND DISTRICT

R. C. HUNT, SR., M.D.....Fairmont  
Counties—Cottonwood, Faribault, Freeborn, Jackson, Martin, Murray, Nobles, Pipestone, Rock, Watonwan

### THIRD DISTRICT

P. E. HERMANSON, M.D.....Hendricks  
Counties—Big Stone, Chippewa, Kandiyohi, Lac Qui Parle, Lincoln, Lyon, Meeker, Pope, Redwood, Renville, Stevens, Swift, Traverse, Yellow Medicine

### FOURTH DISTRICT

H. J. NILSON, M.D.....North Mankato  
Counties—Blue Earth, Brown, Carver, Le Sueur, McLeod, Nicollet, Scott, Sibley, Waseca

### NINTH DISTRICT

CLARENCE JACOBSON, M.D.....Chisholm  
Counties—Carlton, Cook, Itasca, Lake, St. Louis

### FIFTH DISTRICT

L. R. CRITCHFIELD, M.D.....Saint Paul  
Counties—Anoka, Chisago, Dakota, Isanti, Kanabec, Mille Lacs, Pine, Ramsey, Sherburne, Washington

### SIXTH DISTRICT

H. B. SWEETSER, M.D.....Minneapolis  
Counties—Hennepin, Wright

### SEVENTH DISTRICT

W. W. WILL, M.D.....Bertha  
Counties—Aitkin, Beltrami, Benton, Cass, Clearwater, Crow Wing, Hubbard, Koochiching, Morrison, Stearns, Todd, Wadena

### EIGHTH DISTRICT

C. L. OPPEGAARD, M.D.....Crookston  
Counties—Becker, Clay, Douglas, Grant, Kittson, Lake of the Woods, Mahnomen, Marshall, Norman, Otter Tail, Pennington, Polk, Red Lake, Roseau, Wilkin

# County Medical Advisory Committees

## AITKIN COUNTY

F. C. CLOSOUT.....	Aitkin
H. T. PETRABORG.....	Aitkin

## ANOKA COUNTY

R. J. SPURZEM.....	Anoka
M. K. PLASHA.....	Anoka
FRANK MORK .....	Anoka

## BECKER COUNTY

ARNOLD LARSON .....	Detroit Lakes
ARVID HOGLUM .....	Lake Park

## BELTRAMI COUNTY

T. P. GROSCHUFF .....	Bemidji
H. A. PALMER .....	Blackduck
D. D. WHITTEMORE .....	Bemidji

## BIG STONE COUNTY

I. L. OLIVER .....	Graceville
OTTO BERGAN .....	Clinton
H. H. HEDEMARK .....	Ortonville

## BLUE EARTH COUNTY

HUGH MORGAN .....	Amboy
GEORGE PENN .....	Mankato
P. G. HOEPER .....	Mankato

## BROWN COUNTY

ALBERT FRITSCHE .....	New Ulm
C. A. SAFFERT .....	New Ulm
O. B. FESENMAIER .....	New Ulm

## CARLTON COUNTY

J. K. BUTLER .....	Cloquet
R. M. EPPARD .....	Cloquet
E. O. HANSON .....	Cloquet

## CARVER COUNTY

G. T. SCHIMELPFENIG .....	Chaska
LEIGHTON LARSON .....	Waconia
JOHN CLARKE .....	Watertown

## CASS COUNTY

O. F. RINGLE .....	Walker
C. H. COOMBS .....	Cass Lake

## CHIPPEWA COUNTY

H. A. ROUST.....	Montevideo
F. M. BURNS .....	Milan
L. R. LIMA, JR.....	Montevideo
J. H. ALLEN .....	Montevideo

## CHISAGO COUNTY

J. E. HALPIN .....	Rush City
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## CLAY COUNTY

J. W. DUNCAN .....	Moorhead
V. D. THYSELL .....	Hawley

## CLEARWATER COUNTY

L. J. LARSON .....	Bagley
W. E. ANDERSON .....	Clearbrook

## COOK COUNTY

W. R. SMITH .....	Grand Marais
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## COTTONWOOD COUNTY

H. C. STRATTE .....	Windom
E. S. SCHUTZ .....	Mountain Lake
J. V. CARLSON .....	Westbrook

## CROW WING COUNTY

V. E. QUANSTROM .....	Brainerd
G. I. BADEAUX .....	Brainerd
J. B. NIXON .....	Crosby

## DAKOTA COUNTY

BERNICE THORESON .....	South St. Paul
H. J. JUST .....	Hastings
A. H. FIELD .....	Farmington

## DODGE COUNTY

C. E. BIGELOW .....	Dodge Center
D. E. AFFELDT .....	Kasson
G. E. OLSON .....	West Concord

## DOUGLAS COUNTY

E. E. EMERSON .....	Osakis
G. W. CLIFFORD .....	Alexandria
E. R. SATHER .....	Alexandria

## FARIBAULT COUNTY

W. C. CHAMBERS .....	Blue Earth
M. D. COOPER .....	Winnebago
RICHARD VIRNIG .....	Wells

## FILLMORE COUNTY

H. M. SKAUG .....	Chatfield
L. W. CLARK .....	Spring Valley
J. P. NEHRING .....	Preston

## FREEBORN COUNTY

L. C. BARR .....	Albert Lea
C. E. J. NELSON .....	Albert Lea
A. G. SHERMAN .....	Albert Lea
CATHERINE BURNS .....	Albert Lea

## GOODHUE COUNTY

R. B. GRAVES .....	Red Wing
W. W. LIFFRIG .....	Red Wing
G. F. HARTNAGEL .....	Red Wing

## GRANT COUNTY

L. R. PARSON .....	Elbow Lake
J. H. CAIN .....	Hoffman

## HENNEPIN COUNTY

SILAS C. ANDERSEN .....	Minneapolis
ARTHUR A. WOHLRABE .....	Minneapolis
BERNARD I. SALITERMAN .....	Minneapolis
ROBERT D. SEMSCH .....	Minneapolis
L. RAYMOND SCHERER .....	Minneapolis
LLOYD F. SHERMAN .....	Minneapolis
NATHAN K. JENSEN .....	Minneapolis
E. HARVEY O'PHELAN .....	Minneapolis

MINNESOTA MEDICINE

COUNTY MEDICAL ADVISORY COMMITTEES

**HOUSTON COUNTY**

N. T. NORRIS .....	Caledonia
L. K. ONSGARD .....	Houston
L. A. KNUTSON .....	Spring Grove

**HUBBARD COUNTY**

DONALD HOUSTON .....	Park Rapids
W. W. HIGGS .....	Park Rapids
JOHN EILER .....	Park Rapids

**ISANTI COUNTY**

W. T. NYGREN .....	Braham
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**ITASCA COUNTY**

E. K. ROWLES .....	Coleraine
G. M. ERSKINE .....	Grand Rapids
M. J. MCKENNA .....	Grand Rapids

**JACKSON COUNTY**

J. T. ROSE .....	Lakefield
H. A. CHRISTIANSEN .....	Jackson
W. H. HALLORAN .....	Jackson

**KANABEC COUNTY**

W. F. NORDMAN .....	Mora
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**KANDIYOHI COUNTY**

J. C. JACOBS .....	Willmar
H. G. BOSLAND .....	Willmar
W. H. SUTHERLAND .....	New London

**KITTSON COUNTY**

A. S. BERLIN .....	Hallock
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**KOOCHICHING COUNTY**

R. D. HANOVER .....	International Falls
R. A. MACDONALD .....	Littlefork
C. C. CRAIG .....	International Falls

**LAC QUI PARLE COUNTY**

V. T. FALLON .....	Dawson
CHESTER ANDERSON .....	Madison

**LAKE COUNTY**

RALPH PAPERMASTER .....	Two Harbors
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**LAKE-OF-THE-WOODS**

A. A. BRINK .....	Baudette
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**LINCOLN COUNTY**

P. E. HERMANSON .....	Hendricks
A. L. VADHEIM .....	Tyler
M. H. LARSON .....	Lake Benton

**LYON COUNTY**

B. C. FORD .....	Marshall
W. W. YAEGER .....	Marshall
W. G. WORKMAN .....	Tracy

**MARSHALL COUNTY**

CARLE HOLMSTROM .....	Warren
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MAY, 1956

**MARTIN COUNTY**

R. C. HUNT .....	Fairmont
C. W. KRAUSE .....	Fairmont
H. A. WILLIAMSON .....	Fairmont
ANTHONY OURADA .....	Fairmont
M. J. LESTER .....	Truman

**MCLEOD COUNTY**

A. M. JENSEN .....	Brownton
E. W. LIPPMAN .....	Hutchinson

**MEEKER COUNTY**

HAROLD WILMOT .....	Litchfield
LENNOX DANIELSON .....	Litchfield
G. M. OLSON .....	Litchfield

**MILLE LACS COUNTY**

A. T. KAPSNER .....	Princeton
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**MORRISON COUNTY**

A. M. WATSON .....	Royalton
E. G. KNIGHT .....	Swanville
O. C. BOLSTAD .....	Little Falls
M. L. HANSEN .....	Little Falls

**MOWER COUNTY**

L. F. TWIGGS .....	Austin
J. G. HAVENS .....	Austin

**MURRAY COUNTY**

B. M. STEVENSON .....	Fulda
R. F. PIERSON .....	Slayton
H. D. PATTERSON .....	Slayton

**NICOLLET-LE SUEUR COUNTY**

R. A. CURTIS .....	Le Center
H. J. NILSON .....	North Mankato
M. E. LENANDER .....	St. Peter

**NOBLES COUNTY**

E. W. ARNOLD .....	Adrian
E. A. KILBRIDE .....	Worthington

**NORMAN COUNTY**

BYRON KINKADE .....	Ada
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**OLMSTED COUNTY**

N. O. HANSON .....	Rochester
E. A. OLSON .....	Pine Island
T. O. WELLNER .....	Rochester

**OTTERTAIL COUNTY**

C. A. BOLINE .....	Battle Lake
W. O. B. NELSON .....	Fergus Falls
C. W. LEWIS .....	Henning
RALPH ESTREM .....	Fergus Falls

**PENNINGTON COUNTY**

M. D. STAREKOW .....	Thief River Falls
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**COUNTY MEDICAL ADVISORY COMMITTEES**

**PINE COUNTY**

A. K. STRATTE ..... Pine City

**PIPESTONE COUNTY**

W. G. BENJAMIN ..... Pipestone  
J. G. LOHMAN ..... Pipestone  
G. BECKERING ..... Edgerton

**POLK COUNTY**

C. G. UHLEY ..... Crookston

**POPE COUNTY**

PAUL SWEDENBURG ..... Glenwood  
G. E. LEE ..... Glenwood

**RAMSEY COUNTY**

D. M. CRAIG ..... St. Paul  
M. L. STRAUS ..... St. Paul  
A. E. MULLER ..... No. St. Paul

**RED LAKE COUNTY**

LESTER DALE ..... Red Lake Falls

**REDWOOD COUNTY**

A. W. DIESNER ..... Redwood Falls  
W. E. JOHNSON ..... Morgan  
H. KNOCHE ..... Morgan

**RENNVILLE COUNTY**

J. A. COSGRIFF, SR. ..... Olivia  
JOHN DORDAL ..... Sacred Heart  
R. PIERCE ..... Olivia

**RICE COUNTY**

A. W. NUETZMAN ..... Faribault  
BERNARD STREET ..... Northfield  
PAUL G. BAUER ..... Faribault

**ROCK COUNTY**

C. L. SHERMAN ..... Luverne  
A. C. MARTIN ..... Luverne  
F. W. BOFENKAMP ..... Luverne

**ROSEAU COUNTY**

LLOYD KLEFSTAD ..... Greenbush

**ST. LOUIS COUNTY**

J. J. COLL ..... Duluth  
K. E. JOHNSON ..... Duluth  
A. L. ABRAHAM ..... Duluth

**SCOTT COUNTY**

H. M. JUERGENS ..... Belle Plaine  
HARRY N. SIMMONDS ..... Prior Lake  
J. E. PONTERIO ..... Shakopee

**SHERBURNE COUNTY**

A. B. ROEHLKE ..... Elk River

**SIBLEY COUNTY**

ROLF HOVDE ..... Winthrop  
R. H. KATH ..... Arlington  
D. C. OLSON ..... Gaylord

**STEARN-BENTON COUNTY**

C. F. BRIGHAM, JR. ..... St. Cloud  
J. B. BEUNING ..... St. Cloud  
R. N. JONES ..... St. Cloud  
N. F. MUSACHIO ..... Foley  
K. A. WALFRED ..... St. Cloud

**STEELE COUNTY**

A. J. OLSON ..... Owatonna  
J. A. MCINTYRE ..... Owatonna

**STEVENS COUNTY**

O. A. EIDE ..... Hancock  
R. A. ROSSBERG ..... Morris  
A. I. ARNESON ..... Morris

**SWIFT COUNTY**

E. J. KAUFMAN ..... Appleton  
R. P. GRIFFIN ..... Benson  
DONALD HOLM ..... Benson

**TODD COUNTY**

M. E. MOSBY ..... Long Prairie  
J. M. COOK ..... Staples  
F. N. GROSE ..... Clarissa

**TRAVERSE COUNTY**

A. L. LINDBERG ..... Wheaton  
A. E. MAGNUSEN ..... Wheaton  
W. F. MUIR ..... Browns Valley

**WABASHA COUNTY**

C. G. OCHSNER ..... Wabasha  
E. C. BAYLEY ..... Lake City  
E. W. ELLIS ..... Elgin

**WADENA COUNTY**

L. T. DAVIS ..... Wadena  
C. H. PIERCE ..... Wadena  
W. E. PARKER ..... Sebeka

**WASECA COUNTY**

S. T. NORMANN ..... Waseca  
B. J. GALLAGHER ..... Waseca

**WASHINGTON COUNTY**

M. JUERGENS ..... Stillwater  
C. H. SHERMAN ..... Bayport  
R. E. CARLSON ..... Stillwater

**WATONWAN COUNTY**

A. D. MATTSON ..... Saint James  
HERBERT BOYSEN ..... Madelia

**WILKIN COUNTY**

L. O'BRIEN ..... Breckenridge  
C. W. JACOBSON ..... Breckenridge

**WINONA COUNTY**

HERBERT vR. HEISE ..... Winona  
ROBERT B. TWEEDY ..... Winona  
HENRY J. ROEMER ..... Winona

**WRIGHT COUNTY**

S. J. RAETZ ..... Maple Lake  
R. M. SANDEEN ..... Buffalo

**YELLOW MEDICINE COUNTY**

CARL LUNDELL ..... Granite Falls  
O. M. ODLAND ..... Granite Falls  
E. R. HUDEC ..... Echo

**MINNESOTA MEDICINE**

# WOMAN'S AUXILIARY

## to the

# MINNESOTA STATE MEDICAL ASSOCIATION

### Officers

Mrs. H. H. FESLER.....	<i>President.....</i>	St. Paul
Mrs. L. P. HOWELL.....	<i>President-elect.....</i>	Rochester
Mrs. DAVID HALPERN.....	<i>First Vice President.....</i>	Brewster
Mrs. KARL JOHNSON.....	<i>Second Vice President.....</i>	Duluth
Mrs. HARVEY O. BEEK.....	<i>Third Vice President.....</i>	St. Paul
Mrs. A. O. SWENSON.....	<i>Fourth Vice President.....</i>	Duluth
Mrs. E. R. HUDEC.....	<i>Recording Secretary.....</i>	Echo
Mrs. W. P. GARDNER.....	<i>Corresponding Secretary.....</i>	St. Paul
Mrs. W. B. STROMME.....	<i>Treasurer.....</i>	Minneapolis
Mrs. G. H. GOEHR.....	<i>Auditor.....</i>	St. Cloud
Mrs. WM. H. VON DER WEYER.....	<i>Historian.....</i>	St. Paul
Mrs. LEO FINK.....	<i>Parliamentarian.....</i>	Minneapolis

### Regional Advisors

Mrs. W. E. WELLMAN.....	<i>First District.....</i>	Rochester
Mrs. O. M. HEIBERG.....	<i>Second District.....</i>	Worthington
Mrs. MAGNUS WESTBY.....	<i>Third District.....</i>	Madison
Mrs. C. J. FRITSCHE.....	<i>Fourth District.....</i>	New Ulm
Mrs. O. I. SOHLBERG.....	<i>Fifth District.....</i>	St. Paul
Mrs. CONRAD KARLEEN.....	<i>Sixth District.....</i>	Minneapolis
Mrs. LESLIE M. EVANS.....	<i>Seventh District.....</i>	Sauk Rapids
Mrs. VERNON D. THYSSELL.....	<i>Eighth District.....</i>	Hawley
Mrs. J. L. MCLEOD.....	<i>Ninth District.....</i>	Grand Rapids

### Chairmen of Committees

#### Standing Committees

Allied Medical Careers—	
Mrs. M. I. HAUGE.....	Clarkfield
AM.E.F.—Mrs. JOHN DORDAL.....	Sacred Heart
Archives—Mrs. JAMES L. BENEPE.....	St. Paul
Bulletin—Mrs. C. E. CARLSON.....	Alexandria
Cancer—Mrs. J. H. CAMERON.....	Crookston
Editor (MINNESOTA MEDICINE)—	
Mrs. L. J. LEONARD.....	Minneapolis
Finance—Mrs. MARK RYAN.....	St. Paul
Legislation—Mrs. PHILIP K. ARZT.....	St. Paul
Medical and Surgical Relief—	
Mrs. W. T. GREENFIELD.....	Cokato
Organization—Mrs. L. P. HOWELL.....	Rochester
Press and Publicity—Mrs. G. E. HARMON.....	St. Paul

MAY, 1956

<i>Printing and Roster—</i>	
Mrs. REUBEN ERICKSON.....	Minneapolis
<i>Program and Health Education—</i>	
Mrs. CHARLES E. MERKERT.....	Minneapolis
<i>Public Relations—</i>	
Mrs. G. A. HEDBERG.....	Nopeming
<i>Resolutions—</i>	
Mrs. A. E. LINDBLOM.....	Mankato
<i>Revisions—</i>	
Mrs. HAROLD F. WAHLQUIST....	Minneapolis

#### Special Committees

<i>Civil Defense—</i>	Mrs. DONALD H. DEWEY.....	Owatonna
<i>Health Days—</i>	Mrs. PETER S. RUDIE.....	Duluth
<i>In Memoriam—</i>	Mrs. HERMAN KESTING.....	St. Paul
<i>Mental Health—</i>	Mrs. WILLIAM GJERDE.....	Lake City
<i>Newsletter—</i>	Mrs. M. F. FELLOWS.....	Duluth

# County Society Roster

## Key to Symbols:

\*Deceased, †Affiliate, Associate, Junior Associate, Life or Resident Member; ‡In Service;  
§Wife is Member of Woman's Auxiliary.

### BLUE EARTH COUNTY MEDICAL SOCIETY

#### Blue Earth County

Regular Meetings, last Monday of the month. Annual Meeting, last Monday of December.

Number of Members—62

<i>President</i>	
CHALGREN, WILLIAM S.....	Mankato
<i>Secretary</i>	
McNEAR, GEORGE R., JR.....	Mankato
§ Anderson, James J.....	Mankato
†Anderson, Margaret C.....	Mankato
†Andrews, Roy N.....	Mankato
Baird, Raymond L.....	Lake Crystal
Batdorf, B. Niles.....	Mankato
Butzer, John A.....	Mankato
Butzer, John F.....	Mankato
Chalgren, William S.....	Mankato
Conley, Robert H.....	Mankato
Dobson, M. W.....	Mankato
Engstrom, Robert.....	Mankato
Eustermann, John J.....	Mankato
Fortier, Rene G.....	Mankato
†Franchere, Fredk. Wm.....	Lake Crystal
†Fugina, George R.....	Mankato
Geurs, Benjamin R.....	Mankato
Haes, Julius E.....	Mankato
Hanmar, Lawrence M.....	Mankato
Hankerson, Robert G.....	Minnesota Lake
†Hassett, Roger C.....	Mankato
Heimark, John J.....	Mankato
Heller, Edgar E.....	Mankato
Hooper, Philip G.....	Mankato
Howard, Marshall I.....	Mankato
†Huffington, Herbert L., Sr.....	Lutsen
Huffington, Herb L.....	Waterville
Jones, Orville H.....	Mankato
†Julian, Richard O.....	Los Angeles, Calif.
Kaufman, Walter B.....	Mankato
Kearney, Rochfort W.....	Mankato
Kemp, Alphonse F.....	Mankato
Koenigsberger, Charles.....	Mankato
Langhoff, Arthur H.....	Mankato
†Liedhoff, Adolph G.....	Mankato
Lindholm, Alton E.....	Mankato
Luck, Hilda.....	Mankato
McNear, George R., Jr.....	Mankato
§ Mickelson, John G.....	Durham, N. C.
†Miller, Victor I.....	Mankato
§ Morgan, Hugh O.....	Amboy
Olive, John T.....	Aurora, Illinois
Penn, George E.....	Mankato
Roth, Frederick D.....	Mankato
Sanford, Raymond A.....	Mankato
Scheidel, Alois M.....	Mankato
†Schmidt, Paul A.....	Mankato
Schmitz, Anthony A.....	Mankato
†Sjodin, J. Donald.....	Mankato
Smith, Harry J.....	Lake Crystal
Smith, Paul M.....	Lake Crystal
Snider, Howard R.....	Mankato
†Sohmer, Alphonse E.....	Mankato
Stillwell, Walter C.....	Mankato
Swenson, Donald B.....	Mankato
Thiem, Chester E.....	Mankato
Troost, Henry B.....	Mankato
Vezina, John C.....	Mapleton
§ Von Drasek, Joseph.....	Mankato
†§ Wentworth, Albert J.....	Mankato
Williams, Hugh O.....	Lake Crystal
§ Wohlraabe, John C.....	St. Clair
Zee, Urban H.....	Mankato

### BLUE EARTH VALLEY MEDICAL SOCIETY

#### Martin-Watonwan-Faribault

Regular Meetings, third Thursday of each month. Annual Meeting in November.

Number of Members—50

<i>President</i>	
WANDKE, OTTO E.....	Fairmont
<i>Secretary</i>	
BOYSEN, HERBERT.....	Madelia
§ Anderson, John W.....	Blue Earth
Armstrong, Ralph S.....	Winnebago
Barr, James S.....	Elmore
Berman, Oscar B.....	St. James
Blumberg, Henry B.....	Fairmont
Boysen, Herbert.....	Madelia
Bratrude, Earl J.....	St. James
†Chambers, Winslow C.....	Blue Earth
Cooper, Maurice D.....	Winnebago
Coutier, Harold E.....	Madelia
Drexler, George W.....	Blue Earth
Gamble, Elbert J.....	Bricelyn
Gamm, Edgar R.....	Triumph
Gardner, Jack K.....	Ceylon
Gardner, Victor H.....	Fairmont
Halverson, Donald E.....	Winnebago
Hanson, Lewis.....	Frost
Heimark, Julius J.....	Fairmont
Hruze, William J.....	Madelia
Hunt, Roscoe C.....	Fairmont
Kraemer, George N.....	Fairmont
Krause, C. W.....	Fairmont
Lester, Malcolm J., Jr.....	Truman
Lindahl, Merlin J.....	Sherburn
Louisell, Charles T.....	Fairmont
†McGroarty, John J.....	Easton
Mattson, Albert D.....	St. James
Mills, John L.....	Winnebago
†Misbach, William D.....	Sherman Oaks, Calif.
‡ Moulton, K. B.....	St. James
§ Nickerson, John R.....	Fairmont
§ Nickerson, Neil D.....	Fairmont
Ourada, Anthony L.....	Fairmont
Parsons, R. A.....	St. James
Parsons, Ralph L.....	Monterey
†Rovilstad, Roger A.....	Rochester
Russ, Homer H.....	Fairmont
Smith, Don V.....	Blue Earth
Snyder, Clifford D.....	Kester
Thayer, Ellsworth A.....	Fairmont
Thompson, A. Henry.....	Madelia
Vaughan, Victor M.....	Truman
Virnig, Mark P.....	Wells
Virnig, Richard P.....	Wells
Wandke, Otto E.....	Fairmont
Watkins, John A.....	Fairmont
Williamson, Harold A.....	Fairmont
†Wilson, Clyde E.....	Blue Earth
Zemke, Erhart E.....	Fairmont

### BROWN COUNTY MEDICAL SOCIETY

#### Brown County

Regular Meetings, quarterly. Annual Meeting in January.

Number of Members—30

<i>President</i>	
FRITSCH, CARL J.....	New Ulm
<i>Secretary</i>	
KAISER, MILTON.....	New Ulm
Black, William A.....	New Ulm
Burnett, Joseph W.....	New Ulm
Cairns, Robert J.....	Redwood Falls
Carthey, Frank J.....	New Ulm
Dubbe, Frederick H.....	New Ulm
Dysterheft, Adolf E.....	Gaylord
§ Fesenmaier, Otto B.....	New Ulm
Flinn, James B.....	Redwood Falls
Fritzsche, Albert.....	New Ulm
Fritzsche, Carl J.....	New Ulm
Fritzsche, Theodore R.....	New Ulm
Goblirsch, Andrew P.....	Sleepy Eye
Hoyde, Rolf.....	Winthrop
Inglis, William.....	Redwood Falls
Kaiser, Milton L.....	New Ulm
Keithahn, Elmer E.....	Sleepy Eye
Kitzberger, Peter J.....	New Ulm
Kruzick, S. J.....	Sleepy Eye
†§ Kusske, Arthur L.....	New Ulm
§ Muesing, William J.....	New Ulm
Nuessle, Walter G.....	Springfield
§ Penk, Engward L.....	Springfield
Peterson, Roy A.....	Vesta
†Reineke, George F.....	New Ulm
Saffert, Cornelius A.....	New Ulm
Schroepel, John E.....	Winthrop
Seifert, Otto J.....	New Ulm
Vogel, Howard A. L.....	New Ulm
Wisness, Osmund A.....	Comfrey
§ Wohlraabe, Edwin J.....	Springfield

MINNESOTA MEDICINE

## COUNTY SOCIETY ROSTER

### CAMP RELEASE DISTRICT MEDICAL SOCIETY Chippewa, Lac qui Parle and Yellow Medicine Counties Regular Meetings, second Thursday. Annual Meeting in November.

Number of Members—34

<i>President</i>	OLAND, OLIN M.	Granite Falls
<i>Secretary</i>		
ALLEN, JOHN H.	Montevideo	
§ Allen, John H.	Montevideo	
ANDERSON, CHESTER A.	Madison	
§ Anderson, Chester A.	Madison	
BARR, RONALD W.	Montevideo	
§ Barr, Ronald W.	Montevideo	
BOODY, GEORGE, JR.	Sandstone	
BURNS, FLOYD M.	Milan	
BURNS, M. ALPHAEUS.	Milan	
CAMP, RAY JUNIOR	Madison	
FALLON, VIRGIL	Dawson	

§ Flom, Robert S.	Columbus, Ga.
Guibert, G. D.	Minneapolis
Hartfiel, Herbert A.	Montevideo
§ Hauge, Malvin I.	Clarkfield
† Holmberg, LeRoy J.	Canby
Hudec, Elwyn R.	Echo
Hustad, Edward G.	Montevideo
Johnson, Vilhelm M.	Dawson
§ Jordan, Kathleen B. Smith.	Granite Falls
Jordan, Lewis S.	Granite Falls
Kaufman, William C.	Appleton
† Krystosek, Lee A.	Madison, Wis.
Larson, Arthur N.	Madison

Larson, Dorette W.	Madison
* Lee, Walter N.	Claremont, Calif.
Lima, Ludvig R., Jr.	Montevideo
Lundell, Carl L.	Granite Falls
Maus, Phillip	New Orleans, La.
Miller, William P.	Montevideo
Nelson, Melvin S.	Granite Falls
Odland, Olin M.	Granite Falls
Owens, William A.	Montevideo
Pertl, Albert L.	Canby
Roust, Henry A.	Montevideo
Schmidt, Paul G., Jr.	Granite Falls
Westby, Magnus	Madison
Wesby, Norval M.	Madison

### CLAY-BECKER COUNTY MEDICAL SOCIETY

Clay & Becker Counties

Regular Meetings, spring, fall and winter. Annual Meeting, November 30.

Number of Members—24

<i>President</i>	RICE, HAGBART G.	Moorhead
<i>Secretary</i>		
DODDS, WILLIAM C.	Detroit Lakes	
§ Bigler, Earl E.	Perham	
Bigler, Ivan E.	Perham	
Bottolffson, Bottolf T.	Moorhead	
Carlson, Vernon J.	Moorhead	

DODDS, WILLIAM C.	Detroit Lakes
DUNCAN, JAMES W.	Moorhead
Geib, Marvin J.	Moorhead
Hagen, Olaf J.	Moorhead
Houglum, Arvid J.	Lake Park
Humphrey, Edward W., Sr.	Moorhead
Johnson, Olga H.	Moorhead
Larson, Arnold	Detroit Lakes
Lorentzen, Ernest S.	Detroit Lakes
Midthune, A. S.	Lake Park

MOBERG, CLARENCE W.	Detroit Lakes
ODLAND, MARK E.	Detroit Lakes
RICE, HAGBART G.	Moorhead
RUTLEDGE, JOHN B.	Detroit Lakes
RUTLEDGE, LLOYD H.	Detroit Lakes
SAXMAN, GERTRUDE	Georgetown
SIMISON, CARL	Barnesville
THYSELL, FRED A.	Moorhead
THYSELL, VERNON D.	Hawley
WATSON, VIRGIL A.	Detroit Lakes

### EAST CENTRAL MINNESOTA MEDICAL SOCIETY Anoka, Chisago, Isanti, Kanabec, Mille Lacs, Pine and Sherburne Counties

Regular Meetings, first Tuesday of every other month of the year.

Annual Meeting, first Tuesday in December.

Number of Members—40

<i>President</i>	BURSETH, EDGAR C.	Mora
<i>Secretary</i>		
TESCH, GORDON H.	Elk River	
ADKINS, GALEN H.	Anoka	
ALBRECHT, H. H.	Chisago City	
BERGE, HARRY L.	Mora	
BEYER, EUGENE F.	San Francisco, Calif.	
BOSSET, CLARENCE S.	Mora	
BUNKER, BEVAN W.	Anoka	
BURSETH, EDGAR C.	Mora	
DREDGE, HOMER P.	Sandstone	
GULLY, RAYMOND J.	Cambridge	
HALPIN, JOSEPH E.	Rush City	

§ HEDENSTROM, PAUL H.	Cambridge
HENRY, HAROLD W.	Hinckley
HOLMES, ALVA E.	Rush City
HUBIN, EDWIN G.	Sandstone
JOHNSON, ALDRIDGE F.	Isle
JOHNSON, ROBERT H.	Chisago City
KAPSNER, ALFRED T.	Princeton
KELSEY, CARLETON G.	St. Paul
LEE, HENRY M.	Cambridge
MCMANUS, WILLIAM F.	Princeton
MACH, RALPH F.	Pine City
MAGNUSON, RAYMOND C.	Cambridge
METCALF, NORMAN B.	Princeton
NELSON, LUTHER A.	Rush City
§ NORDMAN, WILLARD F.	Mora

NYGREN, WILLIAM T.	Braham
† PASEK, EDWARD A.	Minneapolis
PETERSON, ALVIN C.	Mora
PONE, JOHN	Cambridge
* POTEK, DAVID.	Cambridge
ROEHLKE, ARTHUR B.	Elk River
RUDOLPH, FRANK A.	Sandstone
SCHUT, JOHN W.	Anoka
SPURZEM, RAYMOND J.	Anoka
† STAHL, LOUIS H.	Modesto, Calif.
STRATTE, ALF K.	Pine City
SWENSEN, ROY G.	North Branch
TESCH, GORDON H.	Elk River
VIK, MELVIN	Anoka
WALLER, JOSEPH D.	Pine City
WOYDA, WILLIAM C.	Elk River

### FREEBORN COUNTY MEDICAL SOCIETY

Freeborn County

Regular Meetings, third Thursday of even months. Annual Meeting, December.

Number of Members—32

<i>President</i>	SCHMIDT, RUBEN F.	Alden
<i>Secretary</i>		
ELLERTSON, LEONARD M.	Albert Lea	
BARR, LOWELL G.	Albert Lea	
BURNS, CATHERINE	Albert Lea	
BUXTURFF, CARL R.	Freeborn	
CALHOUN, F. W.	Albert Lea	
DEMO, ROBERT A.	Albert Lea	
DONOVAN, DANIEL L.	Albert Lea	
EGGE, SANFORD G.	Albert Lea	

ELLERTSON, LEONARD M.	Albert Lea
ERDAL, OVE A.	Albert Lea
FOLKEN, FRANK G.	Albert Lea
FRISMAN, JOHN P.	Glenville
GILL, THEODORE	Albert Lea
GILLICKSON, ANDREW	Minneapolis
HANSEN, THEODORE M.	Albert Lea
HOLIAN, DARWIN K.	Albert Lea
KAASA, LAWRENCE J.	Albert Lea
KEIL, MARCUS A.	Albert Lea
LEOPARD, BRAND A.	Brownsville, Texas
MENEFEE, EDWARD C.	Albert Lea

NEEL, HARRY B.	Albert Lea
NELSON, CLAYTON E.	Albert Lea
NESHIM, MARTIN O.	Emmons
PALMER, CLINTON F.	Albert Lea
PERSON, JOHN P.	Albert Lea
PRINS, LEO R.	Albert Lea
RYNING, VINCENT	Albert Lea
SCHMITZ, RUBEN F.	Alden
§ SCHULTZ, J. ALBERT	Albert Lea
SHERMAN, ALFRED G.	Albert Lea
STEINER, LEON E.	Philadelphia, Pa.
WHITSON, SIDNEY A.	Albert Lea
WILCOX, G. CHARLES	Albert Lea

### GOODHUE COUNTY MEDICAL SOCIETY

Goodhue County

Regular Meetings, second Thursday. Annual Meeting, December.

Number of Members—27

<i>President</i>	deGEEST, JAMES H.	Goodhue
<i>Secretary</i>		
HAWLEY, GEORGE M. B.	Red Wing	

† AANES, ALMER M.	Red Wing
AKINS, WILLARD M.	Red Wing
ALLEN, GEORGE S.	Cannon Falls
† BOSWELL, J. THORNTON	Kenosha, Wis.

BRIDGE, EZRA V.	Cannon Falls
BRUSEGARD, JAMES F.	Red Wing
CLAYDON, HOWARD F.	Red Wing
deGEEST, JAMES H.	Goodhue

## COUNTY SOCIETY ROSTER

**D** Dovenmuehle, Robert H.....Durham, N. C.  
 Falls, John L.....Red Wing  
 Graves, Richard B.....Red Wing  
 Halvorsen, James W.....Zumbrota  
 Hartnagel, G. F.....Red Wing  
 Hawley, George M. B.....Red Wing

**H** Hedin, Raymond F.....Red Wing  
 Jones, Alvah W.....Red Wing  
 Juers, Edward H.....Red Wing  
 Kimmel, George C.....Red Wing  
 Larson, Oliver E. H.....Zumbrota  
 Liffrig, William W.....Red Wing  
 Miller, Winston R.....Red Wing

**M** Molenaar, Robert E.....Cannon Falls  
 Sherman, Royal V.....Red Wing  
 Smith, Myron W.....Red Wing  
 Steffens, Leon A.....Red Wing  
 Walter, William E.....Wanamingo  
 Wasmund, Clarence W.....Red Wing  
 Williams, Marland R.....Cannon Falls

## HENNEPIN COUNTY MEDICAL SOCIETY

### Hennepin County

**R** Regular Meetings, first Monday of each month, October through May.  
 Annual Meeting, first Monday in October.  
 Number of Members—965

**P** President, ROBERT E.....Minneapolis  
 Secretary, HOLMBERG, CONRAD J.....Minneapolis  
 Exec. Secretary, COOK, THOMAS P.....Minneapolis

Abramson, Milton.....Minneapolis  
 Adkins, Charles D.....Minneapolis  
**A** Agustsson, Hreidar.....Aberdeen, Md.  
 Ahern, Eugene E.....Minneapolis  
 Alexander, Harlan A.....Minneapolis  
 Aling, Charles A.....Minneapolis  
 Althausen, Theodore L., Jr.....Minneapolis  
 Altnow, Hugo O., Coral Gables, Fla.  
 Amatuzio, Donald S.....Minneapolis  
 Andersen, Silas C.....Minneapolis  
 Anderson, Arnold S., St. Louis Park.....Minneapolis  
 Anderson, David M.....Minneapolis  
 Anderson, Edward D.....Minneapolis  
 Anderson, Ernest R.....Minneapolis  
 Anderson, Frank J.....Minneapolis  
 Anderson, John T.....Minneapolis  
 Anderson, Karl W.....Minneapolis  
 Anderson, Roger L.....Minneapolis  
 Anderson, U. Schuyler.....Minneapolis  
 Anderson, Wallace E.....Minneapolis  
 Anderson, William H.....Minneapolis  
 Anderson, William T.....Minneapolis  
 Andreassen, Einar C., St. Paul.....Minneapolis  
 Andreassen, Rolf L.....Minneapolis  
 Andresen, Karl d'A.....Minneapolis  
 Andrews, Robert S.....Minneapolis  
 Anker, Frank J.....Minneapolis  
 Arends, Archibald L.....Minneapolis  
 Arey, Stuart Lane.....Minneapolis  
 Arhelger, Stuart W.....Minneapolis  
 Arlander, Clarence E.....Minneapolis  
 Arling, Leonard S.....Minneapolis  
 Arms, James J.....Minneapolis  
 Arnold, Anna W.....Minneapolis  
 Arvidson, Carl G.....Minneapolis  
**A** Aune, Martin.....Minneapolis  
 \* Aurand, William Henry.....Minneapolis

**B** Baggenstoss, Osmond J.....Minneapolis  
 Bagley, Russell W.....Minneapolis  
 Baird, Joseph W.....Minneapolis  
 Baken, Melvin P.....Minneapolis  
 Baker, Abe B.....Minneapolis  
 Baker, Alfred T.....Minneapolis  
 Baker, Milton E.....Minneapolis  
 Baisis, Peter.....Minneapolis  
 Balkin, Samuel G.....Minneapolis  
 Balogh, Charles J.....Minneapolis  
 Bank, Harry E., San Francisco, Calif.....St. Louis Park  
 Barbo, Alex.....Minneapolis  
 Barr, Maxwell M.....Minneapolis  
 Barr, Robert N.....Minneapolis  
 Barron, Jesse J.....Minneapolis  
**B** Barron, Moses.....Minneapolis  
 Barron, S. Steven.....Minneapolis  
 \* Baxter, Stephen H.....Minneapolis  
 Beach, Northrop.....Minneapolis  
 Becker, Arnetta.....Minneapolis  
 Bedford, Edgar W.....Minneapolis  
 Bernstein, Samuel.....Minneapolis  
 Beiswanger, Richard H.....Minneapolis  
 Bell, E. T.....Minneapolis  
 Belleville, Titus P.....Minneapolis  
 Belzer, Meyer S.....Minneapolis  
 Benesh, Louis A.....Minneapolis  
 Benjamin, Edwin G.....Minneapolis  
 Benjamin, Harold G.....Minneapolis  
 Berg, Clinton C.....Wayzata  
 Berger, Alex G.....Minneapolis  
 Bergh, George S.....Minneapolis  
 Bergh, Solveig M.....Minneapolis  
 Berglund, Eldon B.....Minneapolis  
 Bergquist, James R.....Minneapolis  
 Berkowitz, Nathaniel J.....Minneapolis  
 Berman, Reuben.....Minneapolis  
 Bernstein, Irving C.....Minneapolis  
 Bessesen, Alfred N., Jr.....Minneapolis

**B** Bieter, Raymond N.....Minneapolis  
 Bilka, Paul J.....Minneapolis  
 Binder, Manuel R.....Minneapolis  
 Blake, Allen J.....Hopkins  
 Blake, James A.....Hopkins  
 Blake, Paul S.....Honkops  
 Bloedel, Traugott J.....Osseo  
 Bloomberg, Robert D.....Minneapolis  
 Bloom, Norman B.....Minneapolis  
 Blumenthal, Jacob S.....Minneapolis  
 Boehrer, John J.....Minneapolis  
 Bofenkamp, Benjamin.....Minneapolis  
 Bohn, Donald G.....Minneapolis  
 Boies, Lawrence R.....Minneapolis  
 Booth, Albert E.....Minneapolis  
 \* Boreen, Clifton A.....Minneapolis  
 \* Borgeson, Egbert J.....St. Paul  
 Borman, Chauncey N.....Minneapolis  
 Borowicz, Leonard A.....Minneapolis  
 Bowers, Gordon G.....Minneapolis  
 Boynton, Ruth E.....Minneapolis  
 Braasch, John W.....Minneapolis  
 Bratrud, Arthur F.....Minneapolis  
 Bratrud, Theodore E.....Minneapolis  
 Breitenbucker, Robert B.....Minneapolis  
 Brekke, Harvey J.....Minneapolis  
 Bridge, Allyn G.....Minneapolis  
 Brill, Alice K.....Minneapolis  
 Brooks, Charles N.....Minneapolis  
 Brown, Edgar D., St. Petersburg, Fla.....Minneapolis  
 Brown, Ian A.....Minneapolis  
 Brown, William D.....Minneapolis  
 Buchtstein, Harold F.....Minneapolis  
 Buirge, Raymond E.....Minneapolis  
 Bulkley, Kenneth.....Minneapolis  
 Burnham, Wesley H.....Minneapolis  
 Bushard, Wilfred J.....Minneapolis  
 Buzzelle, Leonard K.....Minneapolis  
 Cable, Morris L.....Minneapolis  
 Cabot, Clyde M.....Minneapolis  
 Cady, Laurence H.....Minneapolis  
 Cameron, Isabel L.....Minneapolis  
 Campbell, Lowell M.....Minneapolis  
 Campbell, Orwood J.....Minneapolis  
 Caplan, Leslie.....Minneapolis  
 Card, William H.....Minneapolis  
 Carey, James B.....Minneapolis  
 Carlander, Lester W.....Minneapolis  
 Carlson, Charles V.....Mound  
 Carlson, Lawrence.....Minneapolis  
 Carlson, Leonard T.....Minneapolis  
 Caron, Robert P.....Minneapolis  
 Carr, William J.....Minneapolis  
 Caspers, Carl G.....Minneapolis  
 Cavanor, Frank T.....Minneapolis  
 Ceder, Elmer T.....Minneapolis  
 Challman, S. Alan.....Minneapolis  
 Chavez, Demetrio A.....Minneapolis  
 Chesler, Merrill D.....Minneapolis  
 \* Chesley, Albert J.....Minneapolis  
 Child, Sherman B.....Minneapolis  
 Chisholm, Tague C.....Minneapolis  
 Clark, Malcolm D.....Minneapolis  
 Clay, Lyman B.....Minneapolis  
 Cochrane, Ray F.....Minneapolis  
 Coe, John I.....Minneapolis  
 Cohen, Bernard A.....Minneapolis  
 Cohen, Ephraim B.....Minneapolis  
 Cohen, Maynard M.....St. Paul  
 Cohen, Sumner S.....Oak Terrace  
 Cole, James S.....Minneapolis  
 \* Condit, William H.....Minneapolis  
 Cooper, Robert R.....Minneapolis  
 Corniea, Albert D.....Minneapolis  
 Correa, Dale H.....Minneapolis  
 Corrigan, Cyril J.....Minneapolis  
 Cowan, Donald W.....Minneapolis  
 Craig, M. Elizabeth.....Minneapolis  
 Cranmer, Richard R.....Minneapolis  
 Cranston, Robert W.....Minneapolis  
 Creevy, Charles D.....Minneapolis  
 \* Creighton, Ralph H.....Minneapolis  
 Culligan, Leo C.....Minneapolis

**C** Cundy, Donald T.....Minneapolis  
 Cutts, George.....Minneapolis  
 Dady, Elmer E.....Minneapolis  
 Daggett, Donald R.....Minneapolis  
 Dahl, Elmer O.....Minneapolis  
 Dahl, James C.....Minneapolis  
 Dahl, John A.....Minneapolis  
 Daniel, Donald H.....Minneapolis  
 \* Daniyluk, Michael.....Minneapolis  
 David, Reuben.....Minneapolis  
 Davis, Jay C.....Minneapolis  
 Davis, William I.....Mound  
 del Plaine, Carlos W.....Minneapolis  
 Devereaux, Thomas J.....Wayzata  
 Dickman, Roy W., Monterey, Calif.....Monterey  
 Diefenbach, Eugene J., Jr.....Minneapolis  
 Diehl, Harold S.....Minneapolis  
 Dierker, Heinrich.....Minneapolis  
 Diessner, Henry D.....Minneapolis  
 Donatelle, Edward P.....Minneapolis  
 Dorge, Richard I.....Minneapolis  
 Dornblaser, Harry B., Los Gatos, Calif.....Los Gatos  
 Dorsey, George C.....Minneapolis  
 Dokey, Gilbert L.....Minneapolis  
 Doyle, Lawrence O.....Minneapolis  
 \* Drake, Charles R.....Minneapolis  
 Drill, Herman E.....Hopkins  
 Duff, Edwin R.....Minneapolis  
 Dummer, Donald J.....Minneapolis  
 Dunlap, Earl H.....Minneapolis  
 Duphot, Joseph A.....Excelsior  
 Duryea, Marby.....Minneapolis  
 Duryea, Willis M.....Minneapolis  
 \* Dutton, C. E.....Minneapolis  
 Dvorak, Benjamin A.....Minneapolis  
 Dwuan, Paul F.....Minneapolis  
 Dworsky, Samuel D.....Minneapolis  
 Eder, W. P.....Minneapolis  
 Ehrenberg, Claude J.....Minneapolis  
 Ehrlich, S. Paul.....Minneapolis  
 Eich, Matthew A.....Minneapolis  
 Eichhorn, Edmund P.....Minneapolis  
 Eisenstadt, David H.....Minneapolis  
 Eisenstadt, William S.....Minneapolis  
 Eitel, George D.....Minneapolis  
 Eli, Earl W.....Minneapolis  
 Ellison, David E.....Minneapolis  
 Ellison, Ellis.....Minneapolis  
 Elrod, Calvin R.....Long Lake  
 Emond, Albert J.....Farmington  
 Emond, Joseph S.....Farmington  
 Engel, Joseph P.....Minneapolis  
 Engelhart, Peter C.....Minneapolis  
 Englund, Elvin F.....Minneapolis  
 Engstrand, Oscar J.....Minneapolis  
 Engstrom, Denton P.....Minneapolis  
 Erickson, Clifford O.....Minneapolis  
 Erickson, Laurence F.....Minneapolis  
 Erickson, Myron E.....Minneapolis  
 Erickson, Reuben F.....Minneapolis  
 \* Erickson, Reinhold M.....Wayzata  
 Esensten, Sidney.....Minneapolis  
 Evans, Edward T.....Minneapolis  
 Evans, Robert D.....Minneapolis  
 Fahr, George.....Minneapolis  
 Fansler, Walter A.....Minneapolis  
 Feeney, John M.....Minneapolis  
 Feigal, David W.....Wayzata  
 Feinberg, Philip.....Minneapolis  
 Feinberg, Samuel B.....Minneapolis  
 Feinstein, Julius Y.....Minneapolis  
 Fenger, Ejvind P. K.....Oak Terrace  
 Field, Charles W.....Minneapolis  
 Fingerman, David L.....Minneapolis  
 Fink, Leo Wm.....Minneapolis  
 Fink, Walter H.....Minneapolis  
 Fisher, Isadore I.....Minneapolis  
 Fitzgerald, D. F.....Wayzata  
 \* Fjelstad, Christian A.....Minneapolis  
 Fleeson, William H.....Minneapolis  
 Fleming, Dean S.....Minneapolis

## COUNTY SOCIETY ROSTER

Flehr, Richard R.	Minneapolis	Hay, Lyle J.	Minneapolis	King, Frances W.	Oak Terrace
Flink, Edmund B.	Minneapolis	Hayes, James M.	Minneapolis	Kinsella, Thomas J.	Minneapolis
Foker, Leslie W.	Minneapolis	Hays, Albert T.	Minneapolis	Knapp, Miland E.	Minneapolis
Folsom, Louis B.	Minneapolis	Head, Douglas P.	Minneapolis	Knight, Ralph T.	Minneapolis
Ford, William H.	Minneapolis	Hebbel, Robert	Minneapolis	Knight, Ray R.	Minneapolis
Foster, Orley W.	Minneapolis	Hempel, Dean J.	Minneapolis	Knudsen, Helen L.	Minneapolis
Fowler, Lucius Haynes	Minneapolis	Hendrickson, John F.	Minneapolis	Koepcke, Gerald M.	Minneapolis
Fox, Donald P. Tanganyika	East Africa	Henrikson, Earl C.	Kirksville, Mo.	Koller, Hermann M.	Minneapolis
Fox, James Rogers.	Minneapolis	Henry, Clifford E.	Minneapolis	Koller, Louis R.	Minneapolis
Franc, Donald B.	Minneapolis	Herbert, Willis L.	Minneapolis	Koller, Robert L.	Minneapolis
Fredericks, George M.	Minneapolis	Hermann, Harold W.	Minneapolis	Korchik, John P.	Minneapolis
Freeman, Craig W.	Minneapolis	Higgins, John H.	Minneapolis	Kosick, John, Jr.	Minneapolis
Freeman, Donald W.	St. Louis Park	Hilgermann, George O.	Minneapolis	Kottke, Frederic J.	Minneapolis
French, Lyle A.	Minneapolis	Hill, Earl	Minneapolis	Koucky, Rudolph W.	Minneapolis
Frey, Richard J.	Minneapolis	Hill, Elmer M.	Minneapolis	Kovack, Freeman D.	Minneapolis
Friberg, Joseph B.	Minneapolis	Hillis, Samuel J.	Minneapolis	Kraft, Walter E.	Minneapolis
Fried, Louis A.	Minneapolis	Hinckley, Robert G.	Minneapolis	Kremens, Arnold J.	Minneapolis
Friedell, Aaron	St. Louis Park	Hirshfield, Frank R.	Minneapolis	Krieser, Albert E.	Minneapolis
Friedell, George	St. Louis Park	Hitchcock, Claude R.	Minneapolis	Kucera, Frank J.	Hopkins
Friedman, Harry S.	Minneapolis	Hoffbauer, Frederick W.	Minneapolis	Kucera, William J., Sr.	Minneapolis
Friedman, Jack	Minneapolis	Hoffert, Henry E.	Minneapolis	Kucera, William J., Jr.	Minneapolis
Friend, Charles A.	Minneapolis	Hoffman, Roy A.	Minneapolis	Kuzs, Clarence V.	Minneapolis
Frost, John B.	Minneapolis	Hoffman, Walter L.	Minneapolis	LaBree, John W.	Saint Louis Park
Frost, Russell H.	Oak Terrace	Holmberg, Conrad J.	Minneapolis	Lajoie, John M.	Minneapolis
Frykman, Howard M.	Minneapolis	Holzapfel, Fred C.	Minneapolis	Lamb, H. Douglas.	Minneapolis
Frys, Russell N.	Minneapolis	Horns, Howard L.	Minneapolis	Lang, Leonard A.	Minneapolis
Fuller, Alice H.	Minneapolis	Horns, Richard C.	Minneapolis	Lange, Robert D.	Washington, D. C.
Funk, Victor K.	Oak Terrace	Houkom, Bjarne	Minneapolis	Lapierre, Arthur F.	Minneapolis
Furman, Lucie Christine	Minneapolis	Houle, Rollin J.	New Brighton	Lapierre, Jean T.	Minneapolis
Gaard, Richard C.	Minneapolis	Hovland, Melvin L.	Minneapolis	Larsen, Frank W.	Minneapolis
Gallett, Lester E.	Minneapolis	Howard, Robert B.	Minneapolis	Larson, Clarence M.	Minneapolis
Galligan, Margaret M.	Minneapolis	Howard, Solomon E.	Minneapolis	Larson, Donald M.	Minneapolis
Gammell, John H.	Minneapolis	Howell, Carter W.	Minneapolis	Larson, Lawrence M.	Minneapolis
Garamella, Joseph J.	Minneapolis	Hudson, George E.	Minneapolis	Larson, Leonard M.	Oak Terrace
Ganske, George L.	Minneapolis	Huenekens, Edgar J.	Minneapolis	Larson, Paul N.	Minneapolis
Garten, Joseph L.	Minneapolis	Hulteng, Donald B.	Minneapolis	Larson, Ralph H.	Anoka
Garvey, James T.	Minneapolis	Hultkrans, Rudolph E.	Minneapolis	LaVake, Rae T.	Minneapolis
Gaviser, David	Minneapolis	Hurd, Annah	Minneapolis	Laymon, Carl W.	Minneapolis
Gibbs, Robert W.	Minneapolis	Hutchinson, Dorothy W.	Oak Terrace	Leavitt, H. H.	Minneapolis
Giebenhain, John N.	Minneapolis	Ide, Arthur W., Jr.	Minneapolis	Lebowksie, Joseph A.	Minneapolis
Giere, Joseph C.	Minneapolis	Idstrom, Linneus G.	Minneapolis	Leemhuis, Andrew J.	Minneapolis
Giere, Richard W.	Minneapolis	Indeck, Walter	Minneapolis	Leiferman, Robert J.	Minneapolis
Gilbert, Maurice G.	Minneapolis	Ingalls, Edgar G.	Minneapolis	Leland, Harold R.	Minneapolis
Gingold, Benjamin A.	Minneapolis	Irvine, Harry G.	Minneapolis	Lenz, Otto A.	Minneapolis
Givin, Richard B.	Minneapolis	Iverson, Rolf M.	Minneapolis	Leonard, Lawrence J.	Minneapolis
Glaser, John H.	Minneapolis	Jacobson, Loren J.	Minneapolis	Leonard, Samuel	Minneapolis
Glueck, Bernard C.	Minneapolis	Jacobson, Wyman E.	St. Louis Park	Lerner, A. Ross	Minneapolis
Goez, Frederick C.	Minneapolis	Jay, Alan R.	Minneapolis	Lewis, F. John.	Minneapolis
Goldberg, Isadore M.	Minneapolis	Jefferies, William L.	St. Louis Park	Lewis, Joyce S., Jr.	Minneapolis
Goldman, Theodore I.	Minneapolis	Jensen, Harry C.	Minneapolis	Lienke, Roger C.	Minneapolis
Golner, Meyer Z.	Minneapolis	Jensen, Marius J.	Minneapolis	Lillehei, C. Walton.	Minneapolis
Goltz, Robert W.	Minneapolis	Jensen, Nathan K.	Minneapolis	Lillehei, Elmer J.	Robbinsdale
Good, Hoy D.	Minneapolis	Jensen, Reynold A.	Minneapolis	Lind, Carl J., Jr.	Washington, D. C.
Goodchild, William R.	Minneapolis	Jerome, Elizabeth	Minneapolis	Lindberg, Arthur N.	Minneapolis
Gordon, Philip E.	Minneapolis	Jeub, Robert P.	Minneapolis	Lindberg, Arvid C.	Minneapolis
Gordon, Sewell S.	St. Louis Park	Johnson, Angelo	Minneapolis	Lindberg, Vernon L.	Minneapolis
Grant, Suzanne	Minneapolis	Johnson, Arthur B.	Minneapolis	Lindblom, Maurice L.	Minneapolis
Gratzek, Frank R. E.	Minneapolis	Johnson, August E.	Minneapolis	Lindemann, Charles E.	Minneapolis
Gray, Royal C.	Minneapolis	Johnson, Emil W.	Minneapolis	Lindgren, Russell C.	Minneapolis
Green, Robert A.	St. Louis Park	Johnson, Harry A.	Minneapolis	Lindner, Janus C.	Minneapolis
Greenberg, Albert J.	Minneapolis	Johnson, James A.	Minneapolis	Lindquist, Richard H.	Minneapolis
Greenfield, Irving	Minneapolis	Johnson, John W.	Minneapolis	Linner, Gunnar	Minneapolis
Greishiemer, Esther M.	Philadelphia, Pa.	Johnson, Julius	Minneapolis	Linner, Henry P.	Minneapolis
Grimes, Marian	Minneapolis	Johnson, Malcolm R.	Minneapolis	Linner, John H.	Minneapolis
Grimmell, Francis J.	Minneapolis	Johnson, Norman P.	Minneapolis	Linner, Paul W.	Minneapolis
Gronwall, Paul R.	Minneapolis	Johnson, Norton T.	Minneapolis	Lippman, Emanuel S.	Minneapolis
Grotting, John K.	Minneapolis	Johnson, Reinald G.	Minneapolis	Lischitz, Oscar	Minneapolis
Gullickson, Glenn, Jr.	Minneapolis	Johnson, Reuben A.	Minneapolis	Litchfield, John T.	Minneapolis
Gunlaugson, Frederick G.	Minneapolis	Johnson, Richard S.	Minneapolis	Litman, Abraham B.	Minneapolis
Gushurst, Edward G.	Minneapolis	Johnson, Robert E.	Minneapolis	Lober, Paul H.	Minneapolis
Gustason, Harold T.	Minneapolis	Johnson, Roger S.	Wayzata	Lofness, Stanley V.	St. Paul
Haberer, Helen R.	Minneapolis	Johnson, Ronald G.	Minneapolis	Logefeld, Rudolph C.	Minneapolis
Haberland, Lyle F.	Minneapolis	Johnson, Youbert T.	Minneapolis	Loomis, Earl A.	Minneapolis
Hagen, Kristofer	Richfield	Jones, David G.	Minneapolis	Lott, Frederick H.	Oak Terrace
Hagen, Wayne S.	Minneapolis	Jones, Herbert W., Jr.	Minneapolis	Lovett, Beatrice R.	Minneapolis
Haggard, G. D.	Minneapolis	Jones, Richard H.	Minneapolis	Lowry, Elizabeth C.	Minneapolis
Hall, Harry B.	Minneapolis	Jones, William R.	Minneapolis	Lowry, Paul T.	Minneapolis
Hall, Wendell H.	Minneapolis	Josewicz, Alexander	Minneapolis	Lowry, Thomas	Minneapolis
Hamel, Joseph I.	Minneapolis	Judd, Allen S.	Minneapolis	Lueck, Wallace W.	Minneapolis
Hannah, Hewitt B.	Minneapolis	Judd, Walter H.	Washington, D. C.	Lufkin, Nathaniel H.	Minneapolis
Hansen, Cyrus O.	Minneapolis	Jurdy, Mitchell J.	Minneapolis	Lundberg, Ruth I.	Minneapolis
Hansen, Erling W.	Minneapolis	Kadesky, Harold B.	Minneapolis	Lundblad, Stanley W.	Minneapolis
Hansen, Olga S.	Minneapolis	Kalin, Oscar T.	Minneapolis	Lundberg, Karl R.	Minneapolis
Hanson, Rollon M.	Minneapolis	Kallestad, Leonard L.	Wayzata	Lundquist, Virgil J. F.	Minneapolis
Hanson, Harlow J.	Minneapolis	Kantar, Bruce L.	Minneapolis	Lynch, Matthew J.	Minneapolis
Hanson, Henry V.	Minneapolis	Kaplan, Harold A.	Minneapolis	Lyon, James H.	Minneapolis
Hanson, Malcolm B.	Minneapolis	Karleen, Conrad I.	Minneapolis	Lyon, Michael W.	Minneapolis
Hanson, Mark C. L.	Minneapolis	Karlen, Markle	Minneapolis	Lysne, Henry	Minneapolis
Hanson, William A. H.	Minneapolis	Kaufman, Herschel J.	Minneapolis	Lysne, Myron	Minneapolis
Happe, Lawrence J.	Minneapolis	Kelby, Gjert M.	Minneapolis	Lyzenga, Anton G.	Minneapolis
Harris, Leon D.	Minneapolis	Kelly, Charles F.	Minneapolis	McCaffrey, F. John.	Minneapolis
Hartman, Evelyn E.	Minneapolis	Kelly, John P.	Minneapolis	McCann, Eugene J.	Minneapolis
Hass, Frederick M.	Minneapolis	Kennedy, Claude C.	Minneapolis	McCannel, Malcolm A.	Minneapolis
Hastings, DeForest R.	Minneapolis	Kennedy, Jane F.	Minneapolis	McCarthy, Donald	St. Paul
Hastings, Donald W.	Minneapolis	Kerkhoff, Arthur C.	Minneapolis	McCartyne, James S.	Minneapolis
Hauge, Erling T.	Minneapolis	Kiesler, Frank, Jr.	Minneapolis	McCormick, Donald P.	Minneapolis
Haugen, George W.	Minneapolis	Kiesler, Herman	Minneapolis	McDaniel, Oriana	Minneapolis
Haugen, John A.	Minneapolis	Kirkpatrick, John	Minneapolis	McFarland, Arthur H.	Minneapolis
Hauser, Donald C.	Minneapolis	Klindt, John	Minneapolis	McGandy, Robert F.	Minneapolis
Hauser, George W.	Minneapolis	Koepcke, Gerald M.	Minneapolis		
Havel, Robert J.	Minneapolis	Korchiak, John P.	Minneapolis		
Haven, Walter K.	Minneapolis	Krueger, John	Minneapolis		

## COUNTY SOCIETY ROSTER

McGeary, George E.	Minneapolis	O'Donnell, James E.	Minneapolis
McInerny, Maurice W.	Minneapolis	O'Hanlon, John A.	Minneapolis
McKelvey, John L.	Minneapolis	O'Phelan, E. Harvey	Minneapolis
McKenzie, Charles H.	Minneapolis	Oberg, Carl M.	Minneapolis
McKinlay, Chauncey A.	Minneapolis	Olavs, Olga	Minneapolis
McKinney, Frank S.	Minneapolis	Oifelt, Paul C.	Minneapolis
McLaughlin, Byron H.	Minneapolis	Olsen, E. George	Minneapolis
McMurtrie, William B.	Minneapolis	Olsen, Alton C.	Minneapolis
McNeil, John J.	Minneapolis	Olsen, Carl J.	Minneapolis
McPheeters, Herman O.	Minneapolis	Olsen, C. Kent	Minneapolis
McQuarrie, Irvine	Minneapolis	Olsen, Detlef M.	Minneapolis
MacDonald, Daniel A.	Minneapolis	Olsen, Olof A.	Minneapolis
MacDonald, John W.	Minneapolis	Olsen, Philip A.	Minneapolis
MacKinnon, Donald C.	Minneapolis	Olson, Rolland A.	Wayzata
Mach, Frank B.	Minneapolis	Oppen, E. Gerhard	Minneapolis
Maeder, Edward G.	Minneapolis	Oppen, Melvin G.	Wayzata
Maland, Clarence O.	Minneapolis	Opstad, Earl T.	Minneapolis
Mandel, Sheldon L.	Minneapolis		
Mankay, James C.	Minneapolis	Paal, Dwain J.	Minneapolis
Mann, George A.	Minneapolis	Palen, Benjamin J.	Minneapolis
Marking, George H.	Minneapolis	Papernick, Theodore C.	Minneapolis
Martin, Frank E.	Minneapolis	Park, Wilford E.	Minneapolis
Martin, George R.	Minneapolis	Pattee, James J.	Minneapolis
Martinson, Carl J.	Wayzata	Peluso, Charles R.	Minneapolis
Martinson, Elmer J.	Wayzata	Peppard, Thomas A.	Minneapolis
Matill, Peter M.	Oak Terrace	Perlman, Everett C.	Minneapolis
Mattson, Hamlin A. N.	Minneapolis	Perlman, Herschel L.	Minneapolis
Maudner, John B.	Minneapolis	Peteler, Jennings C. L.	Minneapolis
Maxeiner, Stanley R.	Minneapolis	Petersen, Deane A.	Minneapolis
Maxeiner, S. R., Jr.	Minneapolis	Petersen, Glenn L.	Minneapolis
Meller, Robert L.	Minneapolis	Petersen, Peter C.	Minneapolis
Merker, Charles E.	Minneapolis	Petersen, William E.	Minneapolis
Merker, George L.	Minneapolis	Peterson, Alice H.	Minneapolis
Merrick, Charlotte T.	St. Paul	Peterson, Henry	Minneapolis
Meyer, Alvin J.	Minneapolis	Peterson, Herbert W.	Minneapolis
Meyer, Ette L.	Minneapolis	Peterson, Nordahl P.	Minneapolis
Meyer, Robert J.	Minneapolis	Peterson, Oliver H.	Minneapolis
Michael, Joseph C.	Minneapolis	Peterson, Palmer A.	Minneapolis
Michel, Henry H.	Minneapolis	Peterson, Peter E.	Minneapolis
Michelson, Henry E.	Minneapolis	Peterson, Willard C.	Minneapolis
Mickelsen, Emma F.	Minneapolis	Petit, Julien V.	Minneapolis
Miller, Arden L.	Minneapolis	Petit, Leon J.	Minneapolis
Miller, Harold E.	Minneapolis	Pewters, John T.	Minneapolis
Miller, Hugo E.	Minneapolis	Peyton, William T.	Minneapolis
Miller, John C.	Minneapolis	Phelps, Kenneth A.	Minneapolis
Millett, D. Keith.	Minneapolis	Plasha, Matthew K.	Anoka
Milton, John S.	Minneapolis	Plass, Herbert F. R.	Minneapolis
Minsky, Armen A.	Minneapolis	Platou, Erling S.	Minneapolis
Mity, Irving	Minneapolis	Pleissner, Karl W.	Minneapolis
Mitchell, Berton D.	Minneapolis	Plimpton, Nathan C., Jr.	Minneapolis
Mitchell, Edward C.	Minneapolis	Pohl, John F. M.	Minneapolis
Mitchell, Mancel T.	Minneapolis	Pollock, Anthony J.	Minneapolis
Mixer, Harry W.	Minneapolis	Potzak, David S.	Minneapolis
Moberg, Thomas D.	Tacoma, Wash.	Poppe, Frederick H.	Minneapolis
Moe, John H.	Minneapolis	Potter, Robert B.	Minneapolis
Moehn, John T.	Minneapolis	Pratt, Fred J., Sr.	Minneapolis
Moen, Johannes K., Jr.	Minneapolis	Pratt, Fred J., Jr.	Minneapolis
Monahan, Elizabeth S.	Minneapolis	Prem, Konrad A.	Minneapolis
Monson, Einer M.	Minneapolis	Preine, Irving A.	Osseo
Moiv, Irvin H.	Minneapolis	Preston, Paul J.	Minneapolis
Moorhead, Marie	Minneapolis	Price, William E.	Minneapolis
Moos, Daniel J.	Minneapolis	Priest, Robert E.	Minneapolis
Mork, A. Harold	Anoka	Primm, Joseph A.	Minneapolis
Morrison, Charlotte J.	Minneapolis	Proffitt, William E.	Minneapolis
Mosser, Dona G.	Minneapolis	Prosek, Charles E.	Minneapolis
Moyer, Leonard B.	Minneapolis	Quello, Robert O.	Minneapolis
Mulholland, William M.	Minneapolis	Quiggle, Arthur B.	Minneapolis
Murphy, Edmund P.	Minneapolis	Quist, Henry W., Sr.	Minneapolis
Muske, Marvin M.	Minneapolis	Quist, Henry W., Jr.	Minneapolis
Musty, Nicholas J.	Minneapolis	Raile, Richard B.	Minneapolis
Myers, Jay A.	Minneapolis	Ransom, H. Robert.	Osseo
Myhre, James A.	Minneapolis	Ratelle, Alexander E.	Minneapolis
Naslund, Ames W.	Minneapolis	Reader, Donald R.	Minneapolis
Neal, Joe M.	St. Paul	Redding, Foster K.	Minneapolis
Neary, Richard P.	Minneapolis	Regnier, Edward A.	Minneapolis
Nelson, Bernette G.	Minneapolis	Reif, Harold A.	Minneapolis
Nelson, Bernice A.	Minneapolis	Reiley, Richard E.	Minneapolis
Nelson, C. Barton.	Minneapolis	Remole, William D.	Minneapolis
Nelson, Carleton A.	Minneapolis	Resch, Joseph A.	Minneapolis
Nelson, Edward N.	Minneapolis	Rice, Carl O.	Minneapolis
Nelson, Harvey	Minneapolis	Rice, Frank B.	Minneapolis
Nelson, Lloyd S.	Minneapolis	Rice, Fred A.	Minneapolis
Nelson, Maxine O.	Minneapolis	Riedel, Lawrence F.	Minneapolis
Nelson, Maynard C.	Minneapolis	Rieke, Wellington W.	Wayzata
Nelson, O. L. Norman	Minneapolis	Rigler, Leo G.	Minneapolis
Nelson, Wallace I.	Minneapolis	Riordan, Elsie M.	Minneapolis
Nerenberg, Samuel T.	Minneapolis	Risch, Ronald E.	Minneapolis
Nesbit, Samuel	Minneapolis	Rizer, Dean K.	Minneapolis
Nesset, Lawren B.	Minneapolis	Robb, Edwin F.	Minneapolis
Nesset, William D.	Minneapolis	Robbins, Owen F.	Minneapolis
Neumeister, Charles A.	Minneapolis	Roberts, Lewis J.	Minneapolis
Nice, Charles M.	Minneapolis	Roberts, Stanley W.	Minneapolis
Noran, Axel S. N.	Minneapolis	Roberts, William B.	Minneapolis
Noran, Harold H.	Minneapolis	Robinson, Cortland O.	Minneapolis
Nord, Robert E.	Edina	Rock, William H.	Minneapolis
Nordin, Gustaf T.	Minneapolis	Rocknem, Robert E.	Minneapolis
Nordland, Martin, Sr.	Minneapolis	Rockwell, Curtiss V.	Minneapolis
Nordland, Martin, Jr.	Minneapolis	Rodda, Fred C.	Minneapolis
*Noth, Henry W.	Minneapolis	Rodgers, Richard S.	Minneapolis
Nuessle, William F.	Minneapolis	Romness, Kenneth B.	Mound
Nydahl, Malvin J.	Minneapolis		
Nylander, Emil G.	Minneapolis		

## COUNTY SOCIETY ROSTER

Stelter, Lloyd A.	Minneapolis	Thysell, Desmond M.	Minneapolis	Wendland, John P.	Minneapolis
Stennes, John L.	Minneapolis	Tichy, Fae Y.	Pasadena, Calif.	Werner, George	Minneapolis
Stenstrom, Annette T.	Minneapolis	Tingdale, August C.	Minneapolis	Weslowski, Stanley P.	Minneapolis
Stierer, Norman A.	Minneapolis	Tinkham, Robert G.	Minneapolis	West, Catherine C.	Minneapolis
Stewart, Marvin J.	Minneapolis	Titrud, Leonard A.	Minneapolis	Wetherby, Macnider	Minneapolis
Stewart, Rolla I.	Minneapolis	Tobin, John D.	Minneapolis	Wexler, Harold M.	Minneapolis
Stoeser, Albert V.	Minneapolis	Toon, Robert W.	Minneapolis	Wheeler, Robert W.	Minneapolis
Soltz, Robert C.	Minneapolis	Trach, Benedict B.	Minneapolis	Whitacre, John C., II	St. Paul
Stomel, Joseph	Vacaville, Calif.	Trow, James E.	Minneapolis	White, Asher A.	Minneapolis
Stone, Norman F.	Minneapolis	Trow, William H.	Minneapolis	† White, S. Marx	Minneapolis
Stone, Stanley P.	Minneapolis	Trueman, Harold S.	Minneapolis	White, Willard D.	Minneapolis
Strachauer, Arthur C.	Minneapolis	Tsai, Shih Hao	Oak Terrace	Whitesell, Lloyd A.	Minneapolis
Strickler, Jacob H.	Minneapolis	Tucker, Richard C.	Minneapolis	Widen, Willford F.	Minneapolis
Strom, Gordon W.	Minneapolis	Tudor, Richard B.	Minneapolis	† Wilder, Kenneth W.	Minneapolis
Strongren, Delph T.	Minneapolis	Turnacliff, Dale D.	St. Paul	Wilder, Robert L.	Minneapolis
Strommen, William B.	Minneapolis	Tuomi, John E.	Minneapolis	† Wilder, R. M. Jr.	Minneapolis
Strunk, Clarence A.	Minneapolis	* Ude, Walter H.	Minneapolis	Wilken, Paul A.	Minneapolis
Sturges, Robert L.	Minneapolis	Ulrich, Henry L.	Minneapolis	Willcatt, Clarence E.	Phoenix, Arizona
† Subby, Walter	Minneapolis	Ulvestad, Harold S.	Minneapolis	Williams, Robert	New York, N. Y.
Sukov, Marvin	Minneapolis	Undine, Clyde A.	Minneapolis	Winchell, Paul	Minneapolis
Sullivan, Raymond M.	Minneapolis	Udentorfer, Robert W.	Minneapolis	Winther, Nora M. C.	Minneapolis
Sullivan, Robert E.	Minneapolis	Vermund, Halvor	Minneapolis	Wippermann, Frederic F.	Minneapolis
Swain, Francis M.	Minneapolis	Vik, A. Elliott	Minneapolis	Witham, Carl A.	Minneapolis
Swanson, Roy E.	Minneapolis	Vitolis, T. M.	Minneapolis	Wittich, Frederick W.	Minneapolis
Sweetser, Horatio B.	Minneapolis	Wahlquist, Harold F.	Minneapolis	Wohlrabe, Arthur A.	Minneapolis
Sweetser, Theodore H., Sr.	Minneapolis	Waldron, Carl Wm.	Hopkins	Wohlrabe, A. Cabot.	Minneapolis
Sweetser, Theodore H., Jr.	Minneapolis	Wall, Carl R.	Minneapolis	Wolf, Alfred H.	Minneapolis
Switzer, Samuel E.	Minneapolis	Walnick, Albert L.	St. Louis Park	Wolter, Frederick H.	Minneapolis
Swendsen, Carl G.	Graceville	Walsh, Francis M.	Minneapolis	Wright, Thomas D.	Minneapolis
Sverton, Jerome T.	Minneapolis	Walsh, William T.	Minneapolis	Wright, Vale S.	Minneapolis
Tam, Ernest C.	Minneapolis	Wangensteen, Owen H.	Minneapolis	Wright, William S.	Minneapolis
Tangen, George M.	Minneapolis	Ward, Percy A.	Minneapolis	Wyatt, Oswald S.	Minneapolis
Taylor, Joseph H.	Minneapolis	Waters, Alvin W.	Minneapolis	Wynne, Herbert M. N.	Minneapolis
Taylor, William E.	Minneapolis	Watson, C. Gordon.	Minneapolis	Ylvisaker, Ragnvald S.	Minneapolis
Teeter, Richard R.	Minneapolis	Watson, Cecil J.	Minneapolis	Yoerg, Otto Wm.	Minneapolis
Tenner, Robert J.	Minneapolis	† Weaver, Myron Mc.	Vancouver, B. C., Canada	Yue, Wen Y.	Oak Terrace
Thomas, George E.	Minneapolis	Webb, Edgar A.	Minneapolis	Zahrendt, O. Lewis	Minneapolis
Thomas, A. Boyd	Minneapolis	Webb, Roscoe C.	Minneapolis	Zarling, V. Richard	Minneapolis
Thompson, Arthur	Minneapolis	Webber, Richard J.	St. Louis Park	Zaworski, Leo A.	Minneapolis
Thompson, Willis H.	Minneapolis	Webber, Lowell W.	Minneapolis	Zierold, Arthur A.	Minneapolis
Thorson, David S.	Minneapolis	Weisberg, Raphael J.	Minneapolis	Zinter, Ferdinand A.	Minneapolis
Thorson, Stuart V.	Minneapolis			Ziskin, Thomas	Minneapolis

## KANDIYOHI-SWIFT-MEEKER COUNTY MEDICAL SOCIETY

Kandiyohi, Swift, and Meeker Counties

Regular Meetings, third Thursday. Annual Meeting, third Thursday in November.

Number of Members—53

President				Nash, Eldore B.	Eden Valley
SCHNELL, FREDERICK S.	Litchfield	Gaebe, Milton B.	Clara City	Nelson, Robert H.	Benson
Secretary		Giere, Sila W.	Benson	† O'Connor, Daniel C.	Eden Valley
Opsahl, Lawrence J.	Willmar	Gilman, Lloyd C.	Willmar	Olson, Gregory M.	Litchfield
Anderson, Richard E.	Willmar	Griffin, R. P.	Benson	Opsahl, Lawrence J.	Willmar
Aulick, Ernest J.	Belgrade	Guy, Jack A.	New London	† Penhall, Fletcher W.	Morton
Austrian, Sol	St. Paul	Helfwig, Karl Jr.	Kerkhoven	Peterson, Willard E.	Willmar
Bosland, Howard G.	Willmar	Hinz, Walter E.	Willmar	Porter, Oliver M.	Atwater
Bradley, Nelson J.	Willmar	Hodapp, Robert V.	Willmar	Proesch, Ray K.	Willmar
Chunn, Stanley S.	Willmar	Holm, Donald F.	Benson	Rorem, Joseph A.	Appleton
Daignault, Oscar	Benson	Houts, Joseph C.	Dassel	Ruchie, Warren H.	Willmar
Danielson, Karl A.	Litchfield	Jacobs, Douglas L.	Willmar	Rygh, Harold N.	Atwater
Danielson, Lennox	Litchfield	Jacobs, Johannes C.	Willmar	Schnell, Frederick S.	Litchfield
Dille, Donald E.	Iglo, S. D.	Johnson, Marvin W.	Dassel	† Solsem, Frederick N. S.	Spicer
Douglas, Kenneth W.	Sandstone	Kaufman, Edward J.	Appleton	Sorum, F. T.	Willmar
Eblerly, Tobe S.	Benson	Lundblad, Robert M.	Minneapolis	Sutherland, W. H.	New London
Ellinger, Albert J.	Willmar	McCarthy, Austin M.	Willmar	Thompson, Russell A.	Cosmos
Fedor, Robert D.	Litchfield	Macklin, William E., Jr.	Willmar	Wagner, Norman W.	Benson
Frederickson, Alice C.	Willmar	Meinert, John K.	Willmar	Wilmot, Cecil A.	Litchfield
		Michels, Roger P.	Willmar	Wilmot, Harold E.	Litchfield

## LYON-LINCOLN COUNTY MEDICAL SOCIETY

Lyon and Lincoln Counties

Regular Meetings, six-week period in spring and fall. Annual Meeting, November.

Number of Members—25

President				Peterson, Kenneth A.	Marshall
Lee, Norman J.	Tracy	Hedstrom, Philip C.	Marshall	Remberg, R. R.	Tracy
Secretary		Hermannson, Peter E.	Hendricks	Smith, Lloyd A.	Willmar
Hedenstrom, Philip C.	Marshall	Hoidale, Andrew D.	Tracy	Thill, Leonard J.	Balaton
Bodaski, Albert A.	Tyler	Johnson, C. Percy	Tyler	Thompson, Carl O.	Hendricks
Eckdale, John E.	Marshall	Kreuzer, Titus	Marshall	† Valheim, Alfred L.	Tyler
Ferguson, William C.	Walnut Grove	Larson, Milo H.	Lake Benton	† Valentine, Walter H.	Tracy
Ford, Burton C.	Marshall	Lee, Norman J.	Tracy	Wolstan, Simon D.	Minnesota
† Gray, Frank D.	Marshall	Monson, Leonard J.	Canby	Workman, Warner G.	Tracy
		Murphy, Joseph E.	Marshall	Yaeger, Wilbert W.	Marshall
		Myers, John W.	Canby		

## COUNTY SOCIETY ROSTER

### MCLEOD COUNTY MEDICAL SOCIETY

#### McLeod County

Regular Meetings, third Thursday of each month.

Annual Meeting, third Thursday in December.

#### Number of Members—20

<i>President</i>	HUEBERT, DAN W.	Hutchinson	Griebe, Grant L.	Glencoe	Rayner, Ralph R.	Glencoe
<i>Secretary</i>			Howell, Milton	Glencoe	Sahr, Walter G.	Hutchinson
BRETZKE, CARL O.	Hutchinson	Huebert, Dan W.	Hutchinson	↑ Scholpp, Otto W.	Hutchinson	
Bretzke, Carl O.	Hutchinson	Jensen, Alvin M.	Brownout	Selmo, Joseph D.	Norwood	
Brink, Donald M.	Hutchinson	Klima, William W.	Stewart	Sheppard, Charles G.	Hutchinson	
Carroll, John J.	Winsted	Lippmann, Elmer W.	Hutchinson	Smith, George R.	Hutchinson	
† Clement, John B.	Lester Prairie	Neumaier, Arthur	Glencoe	Smyth, John J.	Lester Prairie	

### MOWER COUNTY MEDICAL SOCIETY

#### Mower County

Regular Meetings, last Thursday of every month. Annual Meeting, December.

#### Number of Members—37

<i>President</i>	CRONWELL, BERNHARD J.	Austin	† Havens, John G. W.	Austin	Peterson, Stanley C.	Austin
<i>Secretary</i>			† Hegge, Olav H.	Austin	Peterson, W. H.	Austin
ROSENTHAL, F. HAROLD.	Austin	† Hegge, Rolv S.	Austin	Robertson, Paul A.	Austin	
Anderson, David P.	Austin	Hertel, Garfield E.	Austin	Rosenthal, F. Harold.	Austin	
Anderson, Harold J.	Austin	Hesla, Inman A.	Austin	Sargent, Edward C.	Austin	
Anderson, Wallace R.	Austin	Leck, Paul C.	Austin	Schneider, Paul C.	Adams	
Barber, Tracy	Austin	Lommen, Peter A.	Austin	Seery, Thomas M.	Austin	
Cronwell, Bernhard J.	Austin	McKenna, Elizabeth M.	Austin	Sheedy, Chester L.	Austin	
Elliot, Harold J.	Hayfield	McKenna, Jay K.	Austin	Stahl, George W.	Austin	
Fisch, Herbert M.	Austin	Melzer, George R.	Lyle	Thomson, James M.	Austin	
Flanagan, Leonard G.	Austin	Miller, Herman	Reading	Twiggs, Leo F.	Austin	
Grise, William B.	Austin	Morse, Norton P.	LeRoy	Van Cleve, Horatio P.	Austin	
Hagen, John D.	Austin	Nesse, J. A.	Austin	Wilson, Franklin C.	Hampton, Va.	
		Osborn, Donald O.	Austin	§ Wright, Robert R.	Austin	

### NICOLLET-LE SUEUR COUNTY MEDICAL SOCIETY

#### Nicollet and Le Sueur Counties

Regular Meetings, not scheduled. Annual Meeting, December.

#### Number of Members—22

<i>President</i>	CANFIELD, WAYNE W.	St. Peter	† Curtis, Rauen A.	LeCenter	Nilson, Helmer J.	North Mankato
<i>Secretary</i>			† Ericson, Swan	Los Angeles, Calif.	Olmanson, Edmund G.	St. Peter
LIMBECK, DONALD A.	Le Sueur	Gislason, Solvig T.	St. Peter	Olson, Duane O.	Gaylord	
Ager, Ernest A.	LeCenter	Griley, John W.	Arlington	Orwoll, Harold S.	Japan	
† Aitkens, Herbert B.	LeCenter	Grimes, Burton P.	St. Peter	Sjostrom, Lawrence E.	St. Peter	
† Branham, Donald S.	Dear Park, Wis.	Henry, Martin R.	St. Peter	Sonnesy, Nels N.	Le Sueur	
Canfield, Wayne W.	St. Peter	Kath, Reinhard H.	Arlington	Strather, Carleton S.	St. Peter	
		Lenander, Melvyn E.	St. Peter	§ Strather, Fred P.	St. Peter	
		Limbeck, Donald A.	Le Sueur	Traxler, J. Felix	Henderson	
				§ Wohlrabe, Clarence F.	North Mankato	

### OLMSTED-HOUSTON-FILLMORE-DODGE COUNTY MEDICAL SOCIETY

Regular Meetings, first Wednesday of odd numbered months.

Annual Meeting first Wednesday in November.

#### Number of Members—513

<i>President</i>	BARGEN, J. ARNOLD.	Rochester	Beckett, Victoria Ling	Detroit, Mich.	Burke, Edmund C.	Rochester
<i>Secretary</i>			Behling, Frederick L.	Rochester	Burroughs, John T.	Rochester
WELLMAN, WILLIAM E.	Rochester	† Benedict, William L.	Rochester	Butt, Hugh R.	Rochester	
Aaro, Leonard A.	Rochester	Bennett, Warren A.	Rochester	Cain, James Clarence	Rochester	
Achor, Richard W. P.	Rochester	Berge, Kenneth G.	Rochester	Callahan, John A.	Rochester	
§ Adams, R. Charles.	Rochester	† Berkman, David M.	Oronoco	Calvert, Wilson C.	Rochester	
Affeldt, Daniel E.	Kasson	Bernatz, Philip E.	Rochester	Campbell, Donald C.	Rochester	
Aga, John H.	Rochester	Bickel, William Harold	Rochester	Cantrall, Glenn	Rochester	
Ahlis, Jacob J.	Caledonia	Bigelow, Charles E.	Dodge Center	Carlton, Donald L.	Rochester	
Alexander, John D., Jr.	Rochester	Birkhead, Newton C.	Rochester	Carri, David T.	Rochester	
Allen, Edgar V. N.	Rochester	Black, B. Marden	Rochester	Carrier, Haddon McC.	Rochester	
Amberg, Samuel	Rochester	Blackburn, Charles M.	Rochester	Childs, Donald S., Jr.	Rochester	
Andersen, Howard A.	Rochester	† Bonnet, John D.	New Mexico	Christensen, Norman A.	Rochester	
Anderson, Mark J.	Rochester	Bossard, John W.	Rochester	Christiansen, Bruce W.	Rochester	
Anderson, Markham J., Jr.	Rochester	Botham, Richard James.	Rochester	Christoferson, Kent W.	Rochester	
Anderson, Milton W.	Rochester	Bowers, Dorrance	Rochester	§ Clagett, O. Theron	Rochester	
Baggensett, Archie H.	Rochester	Boyd, David A., Jr.	Rochester	Clark, Edward C.	Rochester	
Bahn, Robert C.	Rochester	Boyd, George K.	New York, N. Y.	Clark, Leslie William	Spring Valley	
Bain, Robert C.	Rochester	Bozanich, Milosh S.	Rochester	Clifton, Theodore A.	Chatfield	
Bair, Hugo L.	Rochester	Braasch, William F.	Rochester	Colby, N. Y., Jr.	Rochester	
Baker, George S.	Rochester	Brandenburg, Robert O.	Rochester	Comfort, Mandred W.	Rochester	
Baker, Harry R.	Hayfield	Braun, Robert A.	Rochester	† Compton, Russell F.	Rochester	
Baker, Hillier L., Jr.	Rochester	Broadbent, James C.	Rochester	Connolly, Daniel C.	Rochester	
Balfour, Donald C.	Rochester	Broders, C. W.	Rochester	Cook, Roderick W., Jr.	Rochester	
Balfour, William M.	Rochester	Brown, Alex E.	Rochester	Cooley, Jack Crain	Rochester	
Banner, Edward Arthur	Rochester	Brown, Henry A.	Rochester	Cooper, Talbert	Rochester	
Bargen, J. Arnold.	Rochester	Brown, Joe R.	Rochester	Corbin, Kendall B.	Rochester	
Barker, Nelson W.	Rochester	Brown, Philip W.	Rochester	Cottone, Francis J.	Rochester	
Barnes, Arlie R.	Rochester	Brown, Roland G.	Rochester	Contry, Markham B.	Rochester	
Barry, Maurice J., Jr.	Rochester	Brunsting, Louis A.	Rochester	Craig, Richard M.	Rochester	
Bartholomew, Lloyd G.	Rochester	Bruwer, Andre J.	Rochester	Craig, Winchell McK.	Rochester	
Bastron, James A.	Rochester	Buie, Louis A.	Rochester	Crumbley, James J., Jr.	Tampa, Fla.	
Bayard, Edwin D.	Rochester	Burchell, Howard B.	Rochester	Culp, Ormond S.	Rochester	
Bearns, Oliver H.	Rochester	Burgerman, Arthur	Rochester	§ Dahlin, David C.	Rochester	
		Burich, Harry F.	Rochester	Daly, David	Rochester	

## COUNTY SOCIETY ROSTER

Daugherty, Guy Wilson.....	Rochester	Henderson, Edward D.....	Rochester	McLeod, John J., Jr.....	Rochester
Davis, Austin C.....	Rochester	Henderson, John W.....	Rochester	McSweeney, Austin.....	Danville, Illinois
Davis, George D.....	Rochester	Henderson, Lowell.....	Rochester	Merritt, Wallace A.....	Rochester
Dearing, William H.....	Rochester	Henderson, Robert Earl.....	Rochester	Messer, James W.....	Rochester
Decker, Barry.....	Rochester	Hepper, Norman G.....	Rochester	Meverding, Henry W.....	Rochester
Decker, David G.....	Rochester	Herbert, Edna E.....	Rochester	Miller, Roland D.....	Rochester
Devine, Kenneth D.....	Rochester	Hewitt, Edith S.....	Rochester	Miller, Ross H.....	Rochester
DeWeerd, James H.....	Rochester	Hewitt, Richard M.....	Rochester	Millikan, Clark H.....	Rochester
Dickinson, L. S.....	Rochester	Heyerdale, O. C.....	Rochester	Mills, Stephen D.....	Rochester
Dines, Grant Roy.....	Rochester	Higgins, John A.....	Rochester	Moersch, Frederick P.....	Rochester
Dixon, Claude F.....	Rochester	Hill, John Roger.....	Rochester	Moersch, Herman J.....	Rochester
Dockerty, Malcolm B.....	Rochester	Hill, Richard Woolsey.....	Rochester	Moertel, Charles G.....	Rochester
Dodge, Henry W., Jr.....	Rochester	Hines, Edgar A., Jr.....	Rochester	Montgomery, Hamilton.....	Rochester
Doughnac, Francis Edmund.....	Rochester	Hodgson, Corrin H.....	Rochester	Morgan, Edward R.....	Rochester
Douglass, Bruce E.....	Rochester	Hodgson, John R.....	Rochester	Morlock, Carl G.....	Rochester
Doyle, James R.....	Rochester	Holland, C. R.....	Rochester	Morrow, George W., Jr.....	Rochester
Drips, Della G.....	Rochester	Hollenhorst, Robert W.....	Rochester	Mudd, Robert H.....	Rochester
Dry, Thomas J.....	Rochester	Holman, Colin B.....	Rochester	Mulder, Donald W.....	Rochester
Dunn, Jack, Jr.....	Urbana, Ill.	Horton, Bayard T.....	Rochester	Mussey, Mary E.....	Rochester
Dushane, James W.....	Rochester	Howell, Llewelyn.....	Rochester	Mussey, Robert D.....	Rochester
Dyer, John Allen.....	Rochester	Hunt, Arthur B.....	Rochester	Myers, Cortland, III.....	Rochester
Eaton, Lealdes M.....	Rochester	Hunter, James S., Jr.....	Rochester	Myers, Richard L.....	Air Force Base, Michigan
Edelmann, Robert B.....	Rochester	Irvine, John C.....	Rochester	Myers, Thomas T.....	Rochester
Edwards, Jesse E.....	Rochester	Jackson, Raymond J.....	Rochester	Myre, Theodore T.....	Rochester
Elkins, Earl C.....	Rochester	Jackson, Sidney C.....	Rochester	Nehring, Jesse P.....	Preston
Ellis, F. Henry.....	Rochester	Janes, Joseph M.....	Rochester	Nelson, William C.....	Rochester
Eltner, Howard L.....	Rochester	Jarvis, Walter H., Jr.....	Rochester	Newnum, Raymond L.....	Rochester
Emmett, John L.....	Rochester	Johnson, Adelaide McF.....	Rochester	Nichols, Donald R.....	Rochester
Emrod, Earl Richard.....	Rochester	Johnson, Carl Eric.....	Rochester	Norris, Neil T.....	Caledonia
Erch, John B.....	Rochester	Johnson, Einer W., Jr.....	Rochester	O'Keefe, Mathew E.....	Rochester
Erickson, Donald J.....	Rochester	Johnson, Ralph B.....	Lanesboro	O'Leary, Paul A.....	Rochester
Eser, Robert A..... St. Charles, Illinois	Rochester	Jones, Robcliff U., Jr..... Fairfield, Conn.	Rochester	O'Shaughnessy, Edward..... Camp Kilmer N. J.	
Estes, J. Earle.....	Rochester	Judd, Edward Starr, Jr.....	Rochester	Odel, Howard M.....	Rochester
Eusterman, George B.....	Rochester	Juergens, John L.....	Rochester	Olsen, Arthur M.....	Rochester
Evans, Harold W.....	Rochester	Keating, Francis Raymond, Jr.....	Rochester	Olson, Ernest E.....	Pine Island
Everts, Arrah B.....	Rochester	Keith, Haddow M.....	Rochester	Olson, Grant E.....	West Concord
Ewen, Edgar F.....	Rochester	Keith, Norman M.....	Rochester	Onifer, Theodore M.....	Rochester
Faber, John E.....	Rochester	Kemper, James W.....	Rochester	Osgard, L. Kenneth.....	Houston
Fabi, Marie Nestor.....	Rochester	Kennedy, Roger L. J.....	Rochester	Osborn, John E.....	Rochester
Fair, Harlan J.....	Rochester	Kernohan, James W.....	Rochester	Owen, Charles A. J.....	Rochester
Faucett, Robert L.....	Rochester	Kiely, Joseph M.....	Rochester	Paris, Jaime.....	Rochester
Faulconer, Albert, Jr.....	Rochester	Kierland, Robert R.....	Rochester	Parker, Harry L.....	Rochester
Feldmann, Floyd M..... New York, N. Y.	Rochester	Kirby, Ralph A.....	Rochester	Parker, Robert L.....	Rochester
Ferris, DeWard O.....	Rochester	Kirklin, Byrl R.....	Rochester	Parkhill, Edith M.....	Rochester
Figi, Frederick A.....	Rochester	Kirklin, John W.....	Rochester	Parke, Thomas W.....	Rochester
Fler, Frank S.....	Rochester	Klass, Donald W..... San Antonio, Texas	Rochester	Parsons, William B., Jr.....	Rochester
Foss, Edward Lehmann.....	Rochester	Knight, James Harry.....	Rochester	Patrick, Robert T.....	Rochester
Fouk, William T., Jr.....	Rochester	Knutson, Lewis A..... Spring Grove	Rochester	Paulson, John A.....	Rochester
Frethem, Allen A.....	Rochester	Koelsche, Giles A.....	Rochester	Pearce, Francis M., Jr.....	Rochester
Fricke, Robert E.....	Rochester	Kragh, Lyle V.....	Rochester	Pease, Gertrude L.....	Rochester
Gambill, Carl M.....	Rochester	Kroboth, Frank J., Jr.....	Rochester	Peck, Owen C.....	Rochester
Gambill, Earl E.....	Rochester	Krouth, Robert M.....	Rochester	Pemberton, John.....	Rochester
Gardner, Gaywinn B.....	Rochester	Krusen, Frank H.....	Rochester	Perry, Harold.....	Rochester
Gardner, John U.....	Rochester	Kuhn, Arthur J.....	Rochester	Peterman, Albert F.....	Rochester
Gastinneau, Clifford F.....	Rochester	Kvala, Walter F.....	Rochester	Peters, Gustavus A.....	Rochester
Gatchell, Frank G.....	Rochester	Lake, Clifford F.....	Rochester	Petersen, Magnus C.....	Rochester
Gaunt, William D.....	Rochester	Langrall, Harrison M.....	Rochester	Pettersen, George R..... Mabel	
Gee, Vernon Ray.....	Rochester	Law, William M.....	Rochester	Pettet, John R..... Fort Ord, Calif.	
Geraci, Joseph Emil.....	Rochester	Lazarie, Jorge A.....	Rochester	Phalen, Patrick T.....	Rochester
Gormley, Ralph K.....	Rochester	Leddy, Eugene T.....	Rochester	Phillips, Donald F.....	Rochester
Giffin, Herbert Z.....	Rochester	Lescue, Richard J..... Ellington Air Force Base, Texas	Rochester	Pittelkow, Robert B.....	Rochester
Gifford, R. W., Jr.....	Rochester	Leualien, Edmund C.....	Rochester	Polley, Howard F.....	Rochester
Ginsberg, Robert L..... San Antonio, Texas	Rochester	Lillie, Harold I.....	Rochester	Pool, Thomas L.....	Rochester
Glew, William Bainbridge.....	Rochester	Lillie, John C.....	Rochester	Poujales, Mary L. Price.....	Rochester
Glick, Dallas D.....	Rochester	Lipscomb, Paul R.....	Rochester	Powelson, Myron H..... San Francisco, Calif.	
Goehr, Homer R.....	Rochester	Litton, Edward M.....	Rochester	Pratt, George F.....	Rochester
Goldstein, Norman P.....	Rochester	Litzow, Thaddeus J.....	Rochester	Pratt, Joseph Hyde, Jr.....	Rochester
Good, C. Allen.....	Rochester	Loftgren, Karl A.....	Rochester	Prickman, Louis E.....	Rochester
Grace, Joseph B.....	Rochester	Logan, Archibald H.....	Rochester	Pruett, Raymond D.....	Rochester
Gray, Howard K.....	Rochester	Logan, George B.....	Rochester	Pugh, David G.....	Rochester
Green, Paul A.....	Rochester	Lorton, William L.....	Rochester	Purnell, Don C.....	Rochester
Griffiths, Edward K.....	Rochester	Love, J. Grafton.....	Rochester	Ralston, Donald E.....	Rochester
Grindlay, John H..... St. Paul	Rochester	Lundsten, Lloyd R.....	Rochester	Randall, Lawrence M.....	Rochester
Gross, John B.....	Rochester	Lundy, John S.....	Rochester	Randall, Raymond V.....	Rochester
Habein, Harold C.....	Rochester	Lynn, Thomas E.....	Rochester	Rasmussen, Waldemar C.....	Rochester
Habein, Harold C., Jr..... Wiesbaden, Germany	Rochester	MacCarty, Collin S.....	Rochester	Reed, William B.....	Rochester
Hagedorn, Albert Berner.....	Rochester	MacCarty, William C.....	Rochester	Reifsnyder, William Henry, III.....	Rochester
Haines, Samuel F.....	Rochester	MacLean, Alexander.....	Rochester	Reitemeier, Richard J.....	Rochester
Hallberg, Olav Erik.....	Rochester	Madalin, Herbert E.....	Rochester	ReMine, William H., Jr.....	Rochester
Hallenbeck, Dorf F.....	Rochester	Magath, Thomas B.....	Rochester	Reno, George L.....	Rochester
Hallenbeck, George A.....	Rochester	Magness, John L.....	Rochester	Rice, Roberta G..... Minneapolis	
Hanson, Norbert Orris.....	Rochester	Manger, William M.....	Rochester	Rickman, James H.....	Rochester
Hadly, William M.....	Rochester	Mankin, Harold T.....	Rochester	Ringer, Merritt G., Jr..... Rantoul, Illinois	
Hargraves, Malcolm M.....	Rochester	Martin, George M.....	Rochester	Risser, Alden F..... Stewartville	
Harrington, Stuart W.....	Rochester	Martin, William J.....	Rochester	Roberts, Frank E.....	Rochester
Harris, Lloyd E.....	Rochester	Mason, Duncan M.....	Rochester	Robinson, Hugh P.....	Rochester
Hartman, Howard R.....	Rochester	Mason, James C.....	Rochester	Rogne, William Gustav..... Spring Grove	
Hartridge, Virginia B.....	Rochester	Mason, James K.....	Rochester	Rooke, E. D.....	Rochester
Hayles, Alvin Beasley.....	Rochester	Mathieson, Don R.....	Rochester	Rothwell, Walter S.....	Rochester
Heck, Frank J.....	Rochester	Matthews, Louis B., Jr.....	Rochester	Rovestad, Randolph A.....	Rochester
Hendrick, William L.....	Rochester	Mayne, John G.....	Rochester	Rucker, Charles W.....	Rochester
Heilmann, Dorothy M., H..... San Diego, California	Rochester	Mavo, Charles William.....	Rochester	Rushton, Joseph G..... Rochester	
Heilmann, Fordyce R.....	Rochester	McBean, J. B.....	Rochester	Ryan, Robert Frank.....	Rochester
Helland, John W..... Spring Grove	Rochester	McConahey, William M., Jr.....	Rochester	Rynearson, Edward H.....	Rochester
Helmholz, Henry F.....	Rochester	McDonald, John R.....	Rochester	Sabin, Frederick Chapman.....	Rochester
Hempstead, Bert E.....	Rochester	McIlhany, Mary Lou..... Wheeler, Texas	Rochester	Salassa, Robert M.....	Rochester
Hench, Philip S.....	Rochester	McKagin, Carle B..... Pine Island	Rochester	Sanford, Arthur H.....	Rochester
		McKay, John W.....	Rochester		
		McKay, Walter E..... Altadena, Calif.	Rochester		

## COUNTY SOCIETY ROSTER

Sauer, William G.	Rochester
Sayre, George P.	Rochester
Scanlon, Paul W.	Rochester
Schaefer, Joseph C.	Rochester
Scheiffele, Charles H.	Rochester
Schiriger, Alexander	Rochester
Schmidt, Herbert William	Rochester
Schneider, James A.	Rochester
Scholz, Donald A.	Rochester
Schreiner, Leon H.	Rochester
Sciarrà, Paschal A.	Rochester
Scimeca, William B.	Rochester
Scott-Miller, James R.	Rochester
Seudamore, Harold H.	Rochester
Seay, James Elbert, III	Big Stone, Texas
Sebrechts, Paul	Great Lakes, Illinois
Selby, John B.	Rochester
Seldon, Thomas H.	Rochester
Shick, Richard M.	Rochester
Shields, Jack W.	Rochester
Siekert, R. G.	Rochester
Silver, Arthur W.	Southbridge, Mass.
Simmons, William H.	Lexington, Ky.
Simonton, Kinsey M.	Rochester
Skaug, Harold M.	Chatfield
Slocumb, Charles H.	Rochester
Smid, Arthur C.	Rochester
Smith, Frederick L.	Rochester
Smith, Harry L.	Rochester
Smith, John L.	Rochester
Smith, Lucian A.	Rochester
Smith, Meredith P.	Rochester
Smith, Reginald A.	Rochester
Smith, Ross H., Jr.	Rochester
Smith, William George	Rochester
Sommerville, Robert L.	Rochester
Soshea, John W.	Rochester
Soule, Edward H.	Rochester
Spear, Harold C.	New Haven, Conn.
Sperl, Michael P., Jr.	Rochester
Sprague, Randall G.	Rochester
Stauffer, Maurice H.	Rochester
Stein, Harold A.	Rochester
Steinhilber, Richard M.	Rochester
Steinmetz, Rodney D.	Rochester
Stevens, Grant M.	Rochester
Stickeny, J. Minott	Rochester
Stillwell, George G.	Rochester
Stillwell, George K.	Rochester
Storsteen, Oliver M.	Rochester
Stroebel, Charles F., Jr.	Rochester
Stuhler, Louis G.	Rochester
Sware, Gerhart T.	Rochester
Svien, Hendrik J.	Rochester
Symmonds, Richard E.	Rochester
Thompson, Gershon J.	Rochester
Thompson, Murray G.	Rochester
Tillich, Jan H.	Rochester
Traynor, Mack V., Jr.	Rochester
Troup, Richard H.	Rochester
Turner, John Cooper, Jr.	Rochester
Uihlein, Alfred	Rochester
Ulrich, Christian A.	Rochester
Underdahl, Laurentius O.	Rochester
Updike, Edwin H., II	Rochester
Utz, David C.	Rochester
Van Herik, Martin	Rochester
Vandever, Harry W.	Rochester
Vaughn, Louis D.	Rochester
Verby, John E.	Rochester
Virnig, Hildegard J.	Rochester
Vreeland, Oliver H.	Rochester
Wagoner, James M.	Harmony
Wakefield, Elmer G.	Rochester
Watkin, Khalil G.	Rochester
Walters, Waltman	Rochester
Ward, Louis E.	Rochester
Watkins, Charles H.	Rochester
Watkins, Lee C., Jr.	Rochester
Watson, Eleanor J.	Rochester
Watson, John R.	Rochester
Waud, Robert E.	Rochester
Waugh, John McM.	Rochester
Weber, Harry M.	Rochester
Weed, Lyle A.	Rochester
Weeks, Richard E.	Rochester
Weiner, Alan D.	Rochester
Weir, James F.	Rochester
Welch, John S.	Rochester
Wellman, William E.	Rochester
Wente, Harold A.	Rochester
Westrup, John E.	Rochester
Whisnant, Jack P.	Rochester
Wilder, Russell M.	Rochester
Willer, Stanley H.	Rochester
Williams, Henry L.	Rochester
Wilson, Robert B.	Rochester
Wilson, Viktor O.	Rochester
Windesheim, John H.	Rochester
Winn, William E., Jr.	Rochester
Winter, Malcolm D., Jr.	Rochester
Wollaeger, Eric E.	Rochester
Wolman, Henry Wm. F.	Rochester
Wood, Harry G.	Rochester
Woodington, George F.	Altoona, Wis.
Woodward, Edward, Jr.	Rochester
Woodner, Lewis B.	Rochester
Wuest, John H.	Rochester
Young, Henry H.	Rochester
Young, John V. W.	Rochester
Zimmer, J. F.	Rochester

## PARK REGION DISTRICT AND COUNTY MEDICAL SOCIETY

## **Douglas, Grant, Otter Tail, Wilkin Counties**

**Regular Meetings, last Wednesday, even numbered months.**

## **Annual Meeting, December**

### **Number of Members—63**

<i>President</i>		Hanson, Everett C.	New York Mills
CARLSON, CARL E.	Alexandria	Hanson, LeRoy W.	Pelican Rapids
<i>Secretary</i>		Heegaard, William G.	Alexandria
SHAVER, WARD	Fergus Falls	Heiberg, Emmett A.	Fergus Falls
Arndt, Harry W.	Detroit Lakes	Helselt, Hovald K.	Pelican Rapids
Baker, Jeannette L.	Fergus Falls	Hom, Leong Y. W.	North Chicago, Ill.
Baker, Norman H.	Fergus Falls	Hunt, William	Fergus Falls
Blakey, Adam R.	Osakis	Jacobson, Clifford W.	Breckenridge
Boline, Clifford A.	Battle Lake	Kevern, Jay L.	Henning
Boysen, Peter	Bemidji	Kippen, Neil	Breckenridge
Cain, James H.	Hoffman	Korda, Henry A.	Pelican Rapids
Carlson, Carl E.	Alexandria	Larson, Donald	St. Paul
Clifford, George W.	Alexandria	Leibold, Herbert H.	Parkers Prairie
Combacker, Leon C.	Fergus Falls	Lewis, Arthur J.	Henning
Daehlin, Rolf	Fairchild, Wash.	Lewis, Charles W.	Henning
DeKruif, Hendrik	Fergus Falls	Love, Frederick A.	Carloc
Doms, Vernon A.	Elbow Lake	Lund, Carl J.	Fergus Falls
Emerson, Edwin E.	Osakis	Mahowald, Aloys	Fergus Falls
Estrem, Ralph L.	Fergus Falls	Miller, William Anthony	New York Mills
Estrem, Robert D.	Fergus Falls	Mortensen, Nels G.	Minneapolis
Geiser, Peter M.	Alexandria	Mouritsen, Glenn J.	Fergus Falls
Hamlon, John S.	Fergus Falls	Naegeli, Frank	Fergus Falls
		Nelson, Roy A.	Fergus Falls
		Nelson, Wilburn O. B.	Fergus Falls
S 8 O'Brien, Louis T. Breckenridge			
Ostergaard, Erling Evansville			
Parson, E. Lillian B. Elbow Lake			
Parson, Lester R. Elbow Lake			
† Patterson, William L. Fergus Falls			
Paulson, Theodore S. Fergus Falls			
Perkins, Douglass E. Alexandria			
Reinhardt, James H. Alexandria			
Rockwood, Philo H. Fergus Falls			
Sanderson, David J. Fergus Falls			
Satersmoen, Theodore Pelican Rapids			
Sather, Edgar R. Alexandria			
Schamber, Walter F. Parkers Prairie			
Schoeneberger, P. B. Perham			
Seitre, Arthur E. Fergus Falls			
Shaver, Ward Fergus Falls			
Sommerness, M. Duane Fergus Falls			
Stensrud, Harold L. Alexandria			
Sutton, Harris R. Hoffman			
Tanquist, Edwin J. Alexandria			
Watson, Loren F. Perham			
Williams, Winfield T. Alexandria			
†Wray, William E. Fergus Falls			
S 9 O'Brien, Louis T. Breckenridge			

## **RAMSEY COUNTY MEDICAL SOCIETY**

## Ramsey County

**Regular Meetings, last Monday each month except June, July, August.**

## **Annual Meeting, last Monday in January.**

## **Number of Members—506**

<i>President</i>	Bacon, Donald K.	St. Paul	Bernier, M. J.	North St. Paul
RITT, ALBERT E.	St. Paul	Baer, Walter	St. Paul	Bernstein, William C.
<i>Secretary</i>		Balcombe, Milton M.	St. Paul	St. Paul
GIBBS, EDWARD C.	St. Paul	Barnett, Joseph M.	St. Paul	Bick, Joseph F.
<i>Executive Secretary</i>		Baronofsky, Ivan D.	St. Paul	†Binger, Henry E. Phoenix
OLSON, MRS. ELEANOR	St. Paul	†Barness, Nellie O. N.	St. Paul	St. Paul
Adair, Albert F., Jr.	St. Paul	Bauer, Eugene L.	St. Paul	Black, Earl J.
†Ahrens, Albert E.	St. Paul	Beals, Hugh	LaJolla, Calif.	†Bock, Rolland A.
†Ahrens, Robert M.	St. Paul	Beck, Charles J.	North St. Paul	St. Paul
†Alden, John F.	St. Paul	Beech, Raymond H.	St. Paul	*Boeckmann, Egil
Ambrus, Laszlo	New York, N. Y.	Beek, Harvey O.	St. Paul	Boehler, Harold L.
Ameroogen, W. W.	St. Paul	Beer, John J.	St. Paul	Bonello, Frank J.
Arnquist, Andrew S.	St. Paul	Bell, Charles C.	St. Paul	Borg, Joseph F.
Arny, Frederick P.	St. Paul	Bellomo, James	St. Paul	†Bouma, Lewis R.
Arzt, Philip K.	St. Paul	Benepe, James L.	St. Paul	Bouthilet, Florence J.
Aurelius, J. Richards	St. Paul	†Bennion, P. H.	Isway, Montana	Brand, George D.
Ausman, Duane R.	St. Paul	Benthack, Elaine M.	St. Paul	Bray, Elwyn R.
Babb, Frank S.	St. Paul	Bentley, Norman P.	St. Paul	Briggs, John F.

## COUNTY SOCIETY ROSTER

† Brown, John C.	Los Gatos, Calif.	St. Paul	Gibbs, Edward C.	St. Paul	Larson, Martin L.	St. Paul
Buckley, J. J.	St. Paul	Gillespie, Delmar R.	St. Paul	Laszewski, Franz von Zelberschwecht		
Bulinski, Theodore J.	St. Paul	Gilsdorf, Donald A.	St. Paul	Lax, Morris H.	St. Paul	
Burch, Edward P., II	St. Paul	Gleason, Wallace A.	St. Paul	† Leahy, Bartholomew	St. Paul	
Burch, Frank E.	St. Paul	Goldsmith, Joseph W.	St. Paul	§ Leavenworth, Richard O., Sr.	St. Paul	
Burklund, Edwin C.	St. Paul	† Goltz, Edward V.	St. Paul	Leavenworth, Richard O., Jr.	St. Louis Park	
Burlingame, David A.	St. Paul	Grant, Hendrie W.	St. Paul	Leick, Richard M.	St. Paul	
Burmeister, Richard O.	St. Paul	Gratzek, Thomas	St. Paul	Leitch, Archibald	St. Paul	
† Burns, Robert M.	St. Paul	Grau, R. K.	St. Paul	Lepak, John A.	Cable, Wisc.	
Burton, Carl G.	St. Paul	Gray, Edward F.	White Bear Lake	Lerche, William	St. Paul	
† Bush, Robert F.	Ft. Benning, Ga.	Hagen, Paul S.	St. Paul	Leven, N. Logan	St. Paul	
Busher, Herbert H.	St. Paul	Hakanson, Erick Y.	St. Paul	Leverett, Carleton W.	St. Paul	
Cain, Clark L.	St. Paul	Hall, Barnard	St. Paul	Levin, Bert G.	St. Paul	
Calin, Stanford H.	St. Paul	Hammes, Ernest M., Sr.	St. Paul	Levitt, George X.	St. Paul	
Callahan, Francis F.	St. Paul	Hammes, Ernest M., Jr.	St. Paul	Lick, Charles L.	St. Paul	
Cameron, Dale C.	St. Paul	† Hannan, Donald W.	St. Paul	Lick, Louis C.	St. Paul	
Canine, James L.	So. St. Paul	Harbaugh, John T.	St. Paul	Lick, William J., Jr.	St. Paul	
Carley, Walter A.	St. Paul	Hartfiel, William F.	St. Paul	Lien, Richard J.	St. Paul	
Cedarleaf, Cherry B.	Mahomed	Hartig, Marjorie	St. Paul	Lightbourn, Edgar L.	Hastings	
Chadbourne, Charles R.	St. Paul	* Hartley, Everett C.	St. Paul	Lilleberg, Norbert J.	St. Paul	
Chatterton, Carl C.	St. Paul	Hauser, Victor P.	St. Paul	Lindell, Robert	St. Paul	
Christensen, Mentor	St. Paul	Hayes, Albert P.	St. Paul	Lippman, Hyman S.	St. Paul	
Christensen, Philip D.	St. Paul	Heck, William W.	St. Paul	Loken, Selmer M.	St. Paul	
Christiansen, Andrew	St. Paul	Hedenstrom, Frank G.	St. Paul	Lowe, Earl R.	So. St. Paul	
Clark, Henry B., Jr.	Minneapolis	Heilig, William R.	St. Paul	Lowe, Thomas A.	So. St. Paul	
Cochrane, Byron B.	St. Paul	Henderson, Arthur J. G., No.	St. Paul	Lundholm, Arthur M.	St. Paul	
Coddon, Walter D.	St. Paul	Hengster, William H.	St. Paul	Lynch, Francis W.	St. Paul	
Cohen, Ellis N.	St. Paul	Hensel, Charles N.	St. Paul	McCabe, James S.	St. Paul	
Colby, Woodward L.	St. Paul	Herman, Samuel M.	St. Paul	McCain, Donovan L.	St. Paul	
Cole, Wallace H.	St. Paul	Heron, Roy C.	St. Paul	McCarthy, Joseph J.	St. Paul	
Coleman, John B.	St. Paul	Herrmann, Edgar T.	St. Paul	† McClanahan, James H.	White Bear Lake	
Collie, Henry G.	St. Petersburg, Fla.	Hertz, Myron J.	St. Paul	McClanahan, Thomas S.	White Bear Lake	
Connolly, Coleman J.	St. Paul	† Hilger, Andrew W.	St. Paul	McClellan, Robert J.	St. Paul	
Connolly, Joseph P.	So. St. Paul	Hilger, Jerome A.	St. Paul	McCloud, Charles N.	St. Paul	
Connor, Charles E.	St. Paul	Hilger, Laurence D.	St. Paul	McEwan, Alexander	St. Paul	
Cook, C. Kenneth	St. Paul	Hilker, Marcus D.	St. Paul	McGroarty, Brian J.	St. Paul	
Cooper, Charles C.	St. Paul	Hiniker, Louis P.	St. Paul	McKenzie, Eva E.	St. Paul	
† Coseriu, Vasile G.	St. Paul	Hodgson, Jane E.	St. Paul	McNeill, J. A.	St. Paul	
Countryman, Roger S.	St. Paul	Holcomb, O. William	St. Paul	Mackoff, Sam M.	Phoenix, Ariz.	
Craig, David M.	St. Paul	Hollinshead, W. H.	St. Paul	Madland, Robert S.	St. Paul	
Critchfield, Lyman R.	St. Paul	Holmen, Robert W.	St. Paul	Malachrich, J. Anthony	St. Paul	
Crowley, James H.	St. Paul	Holt, John E.	St. Paul	Malachrich, J. Anthony, Jr.	St. Paul	
Crudo, Vincent D.	St. Paul	Hopkins, G. Wendell	St. Paul	Marks, Roger W.	St. Paul	
Crum, James W.	St. Paul	Howard, Merrill A.	St. Paul	Martin, Dwight L.	St. Paul	
Culligan, John M.	St. Paul	Howard, Willard S.	St. Paul	Martineau, Joseph L.	St. Paul	
Culver, L. G.	St. Paul	Howe, Newell W.	St. Paul	Mateo, Guillermo	St. Paul	
Davis, Edward V.	St. Paul	Hullsiek, Harold E.	St. Paul	Matthews, James H.	Minneapolis	
Dawson, James R.	St. Paul	Hullsiek, Richard B.	St. Paul	Mazzitello, William F.	St. Paul	
Decker, Charles H.	St. Paul	Hunter, Murray H.	Farmington	Meade, John R.	St. Paul	
Derauf, Benjamin I.	St. Paul	Hunter, Samuel W.	St. Paul	Mears, Curtis J.	St. Paul	
Deters, Donald C.	St. Paul	Hurwitz, Milton M.	St. Paul	Medelman, John P.	St. Paul	
Dickson, Thomas H.	St. Paul	Husebye, Kield O.	St. Paul	Melanson, Joseph F.	St. Paul	
Drake, Carl B.	St. Paul	† Ide, Arthur W.	White Bear Lake	Menold, William F.	St. Paul	
Dunn, James N.	St. Paul	Ikeda, Kano	St. Paul	Merner, Thomas B.	St. Paul	
Dunn, Robert C.	St. Paul	Ingersoll, Carl A.	St. Paul	Merrick, Robert L.	St. Paul	
Earl, George A.	St. Paul	Jackson, William C.	St. Paul	† Meyering, Edward A.	St. Paul	
Earl, John R.	St. Paul	James, Ellery M.	St. Paul	Michienzi, Leonard J.	St. Paul	
Edwards, Joseph W.	St. Paul	James, John W.	St. Paul	Midboe, Gilbert	St. Paul	
Edwards, Lloyd G.	St. Paul	Janssen, Martin E.	St. Paul	Miller, Albert G.	St. Paul	
Edwards, Thomas J.	St. Paul	Jarvis, Bruce W.	St. Paul	Miller, William T.	St. Paul	
Eginton, Charles T.	St. Paul	Jarvis, Charles W.	St. Paul	Miller, Z. R.	St. Paul	
Ely, Orrinian S.	So. St. Paul	Jarvis, Marilyn A.	St. Paul	Milnar, Frank J.	St. Paul	
Emerson, Edward C.	St. Paul	Jastram, Rupert M.	St. Paul	Mintz, Charles M.	St. Paul	
Emmons, R. W.	St. Paul	Jesion, Joseph W.	Pine River	Mishke, Charles J.	St. Paul	
Endress, Edward K.	St. Paul	Johanson, Waldemar G.	St. Paul	Moga, John A.	St. Paul	
Enroth, Oscar E.	St. Paul	Johnson, Carl E.	St. Paul	Molander, Herbert A.	St. Paul	
Ernest, George C. H.	St. Petersburg, Fla.	Johnson, Carolyn A.	St. Paul	Monahan, Robert H.	St. Paul	
Ersfeld, Murray P.	St. Paul	Johnson, Herbert W.	St. Paul	Mooney, Robert D.	St. Paul	
† Eshbly, E. C.	St. Paul	Johnson, Morris B.	St. Paul	Moquin, Marie A.	St. Paul	
Farkas, John V.	St. Paul	Johnson, R. J.	St. Paul	Moren, J. Adelaide	St. Paul	
Fee, John G.	St. Paul	† Jones, E. Mendelssohn.	St. Paul	Moriarty, Berenice	St. Paul	
Feinberg, Milton	St. Paul	Kamman, Gordon R.	St. Paul	Moriarty, Cecilia R.	St. Paul	
Felder, Davitt A.	St. Paul	Kaplan, David H.	St. Paul	Muller, A. Eugene	North St. Paul	
Felton, Arthur J.	St. Paul	Karon, Irvine M.	St. Paul	Mundahl, Harold R.	St. Paul	
Fesler, Harold H.	St. Paul	Kasper, Eugene M.	St. Paul	Murphy, Jack T.	St. Paul	
Field, Anthony H.	Farmington	Katz, Louis J.	Long Beach, Calif.	Nash, Leo A.	St. Paul	
Fifer, William J.	St. Paul	Keefe, Rolland E.	St. Paul	Neibergs, Lidija	St. Paul	
Fink, Daniel L.	St. Paul	Kelly, James H.	St. Paul	Neibergs, Pauls	St. Paul	
Fischer, Robert F.	St. Paul	Kelly, John V.	St. Paul	Nelson, Loren E.	St. Paul	
Fisher, Dan W.	St. Paul	Kelsey, Chauncey M.	St. Paul	† Nelson, Louis A., Sr.	St. Paul	
Flanagan, Harold F.	St. Paul	Kenefick, Emmett V.	St. Paul	Nelson, Louis A., Jr.	St. Paul	
Flannery, Hubert F.	St. Paul	Kenyon, Thomas J.	St. Paul	Nimlos, Kenneth O.	St. Paul	
Flatt, John B.	St. Paul	Kesting, Herman	St. Paul	† Nimlos, Lenore O.	St. Paul	
Flem, Reynold P.	St. Paul	King, George L.	Hudson, Wisc.	Noble, John F.	St. Paul	
Flynn, L. L., Jr.	St. Paul	† Klein, Henry N.	St. Paul	Noble, J. Lawrence	St. Paul	
Fogarty, Charles W., Sr.	St. Paul	Knutson, Gerhard E.	St. Paul	Norman, David D.	St. Paul	
Fogarty, Charles W., Jr.	St. Paul	Knutson, Robert C.	St. Paul	Nuebel, Charles J.	St. Paul	
Fogelberg, Emil J.	St. Paul	Kodres, Nina	St. Paul	Nye, Katherine A.	St. Paul	
Foley, Frederic E. B.	St. Paul	Koza, Donald W.	St. Paul	Nye, Lillian L.	St. Paul	
Forsythe, James R.	St. Paul	Krezowski, Thomas K.	St. Paul	O'Brien, J. C.	St. Paul	
Fox, LeRoy J.	St. Paul	Kugler, Alex A.	St. Paul	† O'Connor, Loren J.	St. Paul	
Freeman, Charles D., Jr.	St. Paul	Kuske, Albert W.	St. Paul	O'Kane, Thomas W.	St. Paul	
Freeman, Gerald I.	St. Paul	Kuske, Bradley W.	St. Paul	O'Malley, Valentine	St. Paul	
Freidman, Louis L.	St. Paul	Kuske, Douglas R.	St. Paul	O'Reilly, Bernard E.	St. Paul	
Fritz, Wallace L.	St. Paul	Kvitrud, Gilbert	St. Paul	Ockuly, Orville	St. Paul	
Froats, Charles W.	St. Paul	Lannin, Bernard G.	St. Paul	Odgen, Warner	St. Paul	
Fuller, Benjamin F.	St. Paul	Lannin, Donald R.	St. Paul	Ohage, Justus	St. Paul	
Galligan, John J.	St. Paul	Larrabee, Walter F., Jr.	St. Paul	Olsen, Ralph L.	St. Paul	
Garbetti, Arthur W.	St. Paul	Larson, Eva-Jane Ostergren	St. Paul	Olson, Charles A.	St. Paul	
Gardner, Walter P.	St. Paul	Larson, James T.	So. St. Paul	Ostergren, Edward W.	St. Paul	
Garrow, Douglas M.	St. Paul	Larson, Kenneth R.	St. Paul			
Gehlen, Joseph N.	St. Paul					

## COUNTY SOCIETY ROSTER

Quattlebaum, Frank W.	St. Paul
Ralph, James R.	St. Paul
Ramlow, Ralph M.	St. Paul
Ramsey, Walter R.	St. Paul
Rasmussen, Ramby C.	St. Paul
Ravits, Harold G.	St. Paul
Rea, Charles E.	St. Paul
Reeves, Melvin M.	St. Paul
Reid, James W.	South St. Paul
Reif, Robert W.	White Bear Lake
Richards, Albert M.	St. Paul
Richards, Ernest T. F.	St. Paul
Richardson, Edward J., Jr.	St. Paul
Richardson, Robert J.	St. Paul
Rick, Paul F. W.	St. Paul
Rinke, Eugene	St. Paul
Ritchie, Wallace P.	St. Paul
Ritt, Albert E.	St. Paul
Roach, Donald E.	St. Paul
Rogers, Sydney F.	St. Paul
Rolis, David H.	St. Paul
Rollie, Orris O.	St. Paul
Rosenthal, Robert	St. Paul
Roth, George C.	St. Paul
Rothchild, Harold J.	St. Paul
Rowe, Clarence J., Jr.	St. Paul
Roy, Phil C.	St. Paul
Rumberger, George N.	Tarzona, Calif.
Rusterholz, Alan P.	St. Paul
Ryan, John J.	St. Paul
Ryan, Joseph M.	St. Paul
Sarnecki, M. M.	St. Paul
Satterlund, Victor L.	St. Paul
Savage, Francis J.	St. Paul
Schmidtke, Reinhardt L.	St. Paul
Schoch, Robert B. J.	St. Paul
Schons, Edward	St. Paul
Schroockenstein, Hugo F.	St. Paul
Schuldt, Frederick C.	St. Paul
Schulze, Albert G.	St. Paul
Schwartz, Marguerite	St. Paul
Scott, Eugene E.	St. Paul
Sekhon, Mohan S.	St. Paul
SELL, Richard J.	North St. Paul
Senkler, George E.	St. Paul
Setzer, Hobie J.	St. Paul
Shannon, William R.	St. Paul
Shelander, Marcus I.	St. Paul
Shellman, John L.	Pacific Palisades, Calif.
Short, Jacob	St. Paul
Siegel, Clarence	St. Paul
Simons, Leander T.	St. Paul
Singer, Benjamin J.	St. Paul
Skinner, Abbott	St. Paul
Skinner, Harvey O.	St. Paul
Smisek, Elmer A.	St. Paul
Smith, Vernon D. E.	St. Paul
Snyder, George William	St. Paul
Sohlberg, Olof I.	St. Paul
Sommerdorff, Vernon L.	St. Paul
Sommers, Ben	St. Paul
Sorem, Milton B.	St. Paul
Soucheray, Philip H.	St. Paul
Souster, Benjamin B.	St. Paul
Sowada, Ernest J.	St. Paul
Sprafka, Gregory	St. Paul
Sprafka, Joseph L.	St. Paul
Sprafka, Joseph M.	St. Paul
Steinberg, Charles L.	St. Paul
Sternier, Donald C.	St. Paul
Sternier, E. R.	St. Paul
Sternier, John J.	St. Paul
Stewart, Alexander	St. Paul
Stoilestad, Armer H.	St. Paul
Stoilestad, Herbert L.	St. Paul
Strand, Jack W.	St. Paul
Strate, Gordon E.	St. Paul
Straus, M. L.	St. Paul
Strem, Edward L.	St. Paul
Starley, Rodney F.	St. Paul
Swanson, John A.	St. Paul
Swanson, Lawrence J.	St. Paul
Swenson, James J.	St. Paul
Swenson, Donald B.	St. Paul
Teisberg, John E.	St. Paul
Thompson, Floyd A.	St. Paul
Thoreson, M. C. Bernice	South St. Paul
Tift, Cyril R.	St. Paul
Tongan, Lyle A.	St. Paul
Tracht, Robert R.	St. Paul
Travis, James S.	St. Paul
Tresilgas, Harold R.	St. Paul
Tresilgas, Richard B.	St. Paul
Ubel, Frank A.	St. Paul
Van Bergen, Frederick H.	Minneapolis
Varco, Richard L.	St. Paul
Veirs, Dean M.	St. Paul
Veirs, Ruby J. S.	St. Paul
Venables, Alexander E.	St. Paul
Waas, Charles W.	St. Paul
Walker, Arthur E.	St. Paul
Wall, James O.	St. Paul
Wallinga, Jack	Oakland, Calif.
Walsh, Edward F.	St. Paul
Walter, Clarence W.	St. Paul
Warren, Cecil A.	St. Paul
Watson, P. Theodore.	St. Paul
Watson, William H. A.	St. Paul
Watson, William J.	Newport
Watz, Clarence F.	St. Paul
Webber, Fred L.	St. Paul
Wedes, Deno J.	St. Paul
Weis, Benjamin A.	St. Paul
Weisberg, Maurice	St. Paul
Wenzel, Gilbert P.	St. Paul
Westover, D. E.	St. Paul
Wetzel, Earl V.	St. Paul
Wilkinson, Stella L.	St. Paul
Williams, Arthur B.	St. Paul
Williams, Clayton K.	St. Paul
Williams, George E.	St. Paul
Williams, John A.	St. Paul
Williams, Richard A.	St. Paul Park
Wilson, J. Allen	St. Paul
Wilson, James V.	St. Paul
Winnick, Joseph B.	St. Paul
Withaus, Melvyn E.	Mahomed
Wolff, Herman J.	St. Paul
Wolkoff, H. J.	St. Paul
Word, Harlan L.	St. Paul
Yamamoto, Joe	Oklahoma City, Okla.
Youngren, Everett R.	St. Paul
Zachman, Leo L.	St. Paul
Zagaria, James F.	St. Paul
Zimmermann, Harry B.	St. Paul

## RED RIVER VALLEY MEDICAL SOCIETY

Kitton, Mahnomen, Marshall, Norman, Pennington, Polk, Red Lake and Roseau Counties  
Regular Meetings, quarterly. Annual Meeting, December.

### Number of Members—60

President	
FEIGAL, WILLIAM M.	Thief River Falls
Secretary	
SATHER, RUSSELL O.	Crookston
Anderson, Wallace E.	Clearbrook
Behr, Orlo K.	Crookston
Berg, Arnold M.	Roseau
Berge, David O.	Roseau
Berlin, Anthony S.	Hallock
Biedermann, Jacob	Thief River Falls
Boyer, George S.	Crookston
Braend, Edward	Thief River Falls
Brink, Adlai A.	Baudette
Cameron, John H.	Crookston
Clapp, Hubert D.	Crookston
Covey, Kenneth W.	Rochester
Dale, Lester N.	Red Lake Falls
Delmore, John L.	Roseau
Delmore, John L., Jr.	Roseau
Delmore, Robert J.	New Orleans, La.
Dowling, William C.	Crookston
Erickson, Eskil	Halstad
Feigal, William M.	Thief River Falls
Flancher, Leon H.	Crookston
Greene, Daniel E.	Thief River Falls
Hirsh, Stanton A.	Crookston
Hollands, William H.	Fisher
Holmstrom, Carle H.	Warren
Janecky, Allen G.	Baudette
Jensen, John A.	Crookston
Kinkade, Byron R.	Ada
Klefstad, Lloyd H.	Greenbush
Kostick, William R.	Fertile
Loren, Theodore	Ada
McDonald, William J.	Crookston
McHardy, Bryson R.	Chicago, Ill.
McKaign, Alan M.	Red Lake Falls
Martin, George B.	Thief River Falls
Mercil, William	Crookston
Mueller, Donald R.	Bagley
Nelson, Henry E.	Crookston
Nelson, Kenneth L.	Warroad
Nord, J. Erling	Hallock
Oppegaard, C. L.	Crookston
Parker, Philip J.	Hallock
Pumala, Erven E.	Warren
Reff, Alan R.	Crookston
Roholt, Christian	McIntosh
Rydland, Arne D.	San Diego, Calif.
Sather, Edgar L.	Fosston
Sather, George A.	Fosston
Sather, Richard N.	Fosston
Sather, Russell O.	Crookston
Schossow, George W.	Erskine
Skogerboe, Rudolph B.	Karlstad
Stadem, Clifford	Twin Valley
Starekow, Milton D.	Thief River Falls
Stensgaard, Kermit L.	Thief River Falls
Stewart, Donald E.	Crookston
Thysell, Harold R.	Crookston
Uhley, Charles G.	Crookston
Van Rooy, George T.	Thief River Falls
Wendl, H. Paul	Thief River Falls
Wikoff, Howard M.	Crookston
Wiltrot, Irving G.	Crookston

## RENVILLE-REDWOOD COUNTY MEDICAL SOCIETY

Renville and Redwood Counties  
Regular Meetings, third Tuesday of each month. Annual Meeting, November.

### Number of Members—26

President	
NELSON, GLENN E.	Fairfax
Secretary	
HAAS, JACK F.	Fairfax
Alcorn, William J.	Wabasso
Alton, Donald	Bird Island
Anderson, Chester A.	Hector
Bessessen, Daniel H.	Olivia
Billings, Ralph E.	Franklin
Brand, William A.	Redwood Falls
Cepelcha, Stanley F.	Redwood Falls
Cosgriff, James A., Sr.	Olivia
Cosgriff, James A., Jr.	Olivia
Diessner, Ardell W.	Redwood Falls
Dordal, John	Sacred Heart
Fawcett, Arthur M.	Renville
Flinn, Thomas E.	Remer
Furr, Leo O.	Long Beach, Calif.
Haas, Jack F.	Fairfax
Hinderaker, Harris P.	Bird Island
Johnson, Orville H.	Omaha, Nebraska
Johnson, William E.	Morgan
Knoche, Harvey A.	Morgan
Lenz, Joseph R.	Morton
Mesker, George H.	Olivia
Metz, Donald D.	Buffalo Lake
Nelson, Glenn E.	Fairfax
Pierce, Robert B.	Renville
Preisinger, Joseph W.	Dallas, Texas
Strauchler, Jonas	Belview

## MINNESOTA MEDICINE

## COUNTY SOCIETY ROSTER

### RICE COUNTY MEDICAL SOCIETY

Rice County

Regular Meetings, third Tuesday of each month. Annual Meeting, third Tuesday in October.

Number of Members—38

<i>President</i>	
OUR, BURTON A.	Faribault
<i>Secretary</i>	
BEATON, J. GORDON	Northfield
Bauer, Paul G.	Faribault
Beaton, J. Gordon	Northfield
Bruhl, Heinz H.	Faribault
Buesgens, Ralph H.	Waterville
Dungay, Neil S.	Northfield
Engberg, Edward J.	Faribault
Francis, David W.	Morristown
Furlow, William L.	Faribault
Hanson, Adolph M.	Faribault

8 Hanson, John W.	Northfield
† Huxley, Frederick R.	Faribault
Kennedy, George L.	Faribault
Kolars, James J.	Faribault
‡ Kucera, Louis B.	Colorado Springs, Colorado
Larson, W. G.	Northfield
Lende, Norman	Faribault
Lexa, F. J.	Longfellow
3 Mears, Robert F.	Northfield
Meyer, Frederick C.	Kenyon
Meyer, Paul F.	Faribault
‡ Meyer, Robert P.	Faribault
Moses, Royal R.	Kenyon
Nelson, Ernest J.	Lonsdale

8 Nielsen, Alvin M.	Northfield
Nuetzman, Arthur W.	Faribault
Orr, Burton A.	Faribault
Ozolins, Marta	Faribault
Peterson, D. H.	Northfield
Roberts, Stanley E.	Faribault
Robilliard, Charles M.	Faribault
Rumpf, Carl W.	Faribault
Rysgaard, George M.	Northfield
Stevenson, Frank W.	Faribault
Street, Bernard	Northfield
Studer, Donald J.	Faribault
Traeger, Carl A.	Faribault
Weaver, Paul H.	Faribault
Wilson, Warren E.	Northfield

### ST. LOUIS COUNTY MEDICAL SOCIETY

Carlton, Cook, Itasca, Lake and St. Louis Counties

Regular Meetings, second Thursday, except July and August.

Annual Meeting, second Thursday in January.

Number of Members—280

<i>President</i>	
BIANCO, A. J., Sr.	Duluth
<i>Secretary</i>	
BERGAN, R. O.	Duluth
<i>Executive Secretary</i>	
MRS. MARGARET B. GILBERT	Duluth

Abraham, Arden L.	Duluth
Adams, Bertram S.	Hibbing
Addy, Edward R.	Gilbert
Ahola, Kenneth E.	Hibbing
Ahrens, Curtis F.	Duluth
Allison, David D.	Duluth
Alpert, Abraham E.	Virginia
Andrew, William F.	Duluth
Antonow, Arthur M.	Virginia
Aro, Joseph L.	Hibbing
Aska, Joseph J.	Duluth
Athens, Alvin G.	Duluth
Atmore, William G.	Duluth
Aufderheide, Arthur C.	Duluth
Backus, Reno W.	Nothoming
Bagley, Charles M.	Duluth
Bagle, Elizabeth C.	Duluth
Bailey, William R.	Duluth
Baich, Velenim M.	Coleraine
Bakkila, Henry E.	Duluth
Bardon, Richard	Duluth
Barker, John D.	Duluth
Barnes, Richard E.	Aurora
Barney, Leon A.	Duluth
Barrett, Earl	Duluth
Bartzen, Peter J.	Duluth
Becker, Fredk. T.	Duluth
Benell, Otto E.	Virginia
Bekpo, Marie K.	Cloquet
Berdez, George L.	Duluth
Bergan, R. O.	Duluth
Bianco, Anthony J., Jr.	Duluth
Bianco, Anthony J., Sr.	Rochester
Binet, Henry E.	Grand Rapids
Blackmore, Sidney C.	Biwabik
Bloom, Joseph	Silver Bay
Bolz, J. Arnold	Grand Rapids
Boman, Paul G.	Duluth
Bonner, John L.	Eveleth
Bouchelle, McLemore	Virginia
Bowen, Robert L.	Hibbing
Boyce, Lydia H.	Man, West Virginia
Boyer, Sam H., Sr.	Duluth
Boyer, Sam H., Jr.	Duluth
Braun, Ohmhardt C.	Grand Rapids
Bray, Philip N.	Duluth
Brockway, Roger W.	Grand Rapids
Brooker, Warren J.	Duluth
Buchanan, Gerald S.	Ft. Benning, Ga.
Buckley, Robert P.	Duluth
Burleigh, Edward G.	Eveleth
Butler, John K.	Cloquet
Cantwell, William F.	International Falls
Chermak, Francis G.	International Falls
Chittum, John R.	Aurora
Christensen, Clarence H.	Duluth
Ciriacy, Edward W.	Ely
Clark, Clarence L.	Duluth
Clark, Elizabeth A.	Duluth
Clark, Ivan T.	Duluth
Coll, James J.	Duluth
Collins, Arthur N.	Duluth
Conley, Francis W.	Duluth
Cope, Hershel E.	Minneapolis
Cowan, George M.	Duluth

Coventry, William D.	Duluth
Detjen, Edward D.	Bigfork
Dickson, Franklin H., Jr.	Proctor
Doxsee, George C.	Chisholm
Dwyer, John J.	Duluth
Eckman, Philip F.	Duluth
Eckman, Ralph J.	Duluth
Eisenman, Walter	Hibbing
Eklund, John William	Duluth
Eklund, Carl D.	Duluth
Elias, Frank J.	Duluth
Emanuel, Karl William	Duluth
Eppard, Raymond M.	Cloquet
Ericsson, George P.	Hibbing
Ericksen, Vernon D.	Grand Rapids
Erskine, Gordon M.	Grand Rapids
Evensta, John B.	Grand Rapids
Farley, Frank G.	Hibbing
Fawcett, Keith R.	Duluth
Fellows, Manley F.	Duluth
Ferrand, Paula T.	Moose Lake
Ferrall, Clarence R.	Grand Rapids
Feuling, John C.	Duluth
Fifield, Malcolm M.	Duluth
Fischer, Mario McC.	Duluth
Fisketti, Henry	Duluth
Flynn, Bernard F.	Hibbing
Fredericks, Merriam G.	Duluth
French, Bayard T.	Hibbing
Fuller, Josiah	Duluth
Gillespie, Malcolm G.	Duluth
Goldish, Daniel R.	Duluth
Goldish, Robert J.	Duluth
Goodman, Charles E.	Virginia
Gowan, Lawrence R.	Chisholm
† Graham, Archibald W.	Chisholm
Grahek, Jack P.	Ely
Granquist, Richard D.	Coleraine
Grinley, Andrew V.	Grand Rapids
Grohs, William H.	Duluth
Haaik, John E.	Duluth
Halbert, John J.	Duluth
Halliday, Phillip V.	Minneapolis
Halper, Bernard	Hibbing
Hansen, Robert E.	Duluth
Hanson, Ernest O.	Cloquet
Harrington, Vernon A.	Duluth
Harris, Carl N.	Hibbing
† Hatch, Walter E.	Duluth
Hedberg, Gustaf A.	Nothoming
Hiam, William C.	Cook
Hilding, Anderson C.	Duluth
Hill, Frederick E.	Riverside, Calif.
Hill, John F.	Virginia
Hirschboeck, Frank J.	Duluth
Hoff, Herbert O.	Duluth
Hoover, Norman W.	Virginia
Houk, Samuel S.	Duluth
Hult, John E.	Cloquet
Hutchinson, Henry	Moose Lake
Indihar, John E.	Minneapolis
Ireland, Gerald W.	Nashwauk
Jacobson, Clarence	Chisholm
Jacobson, Ferdinand C.	Duluth
Jensen, Thorvold J.	Duluth
Jeronimus, Henry J.	Duluth
Jessico, Charles M.	Duluth
Joffe, Harold H.	Virginia
Johnson, Henry A., Jr.	Edina
Johnson, Karl E.	Duluth

Johnsrud, Luverne W.	Hibbing
Johnston, Henry W.	Virginia
Johnston, Rufus O.	Gainesville, Fla.
Jolin, Francis M.	Bovey
Juntunen, Roy R.	Duluth
Karges, L. E.	Grand Rapids
Kelley, Robert T.	Nashwauk
Kelley, Walter	Duluth
Klein, Harry	Duluth
Klein, William A.	Duluth
Knapp, Frank N.	Duluth
Knoedler, John P.	Duluth
Kohlbry, Carl O.	Duluth
Koskela, Lauri E.	Keweenaw
Kotchvar, Frank R.	Eveleth
Kozberg, Oscar	Moose Lake
Krueger, Victor R.	Nothoming
Krueger, Elmer L., Jr.	Hibbing
LaBree, Robert H.	Duluth
† Laird, Arthur T.	Duluth
Larson, Keith D.	Moose Lake
Latterell, Kenneth E.	Duluth
Law, Harrison E.	Virginia
Leek, Joseph H.	Duluth
Lepak, Francis J.	Duluth
Leppo, N. Erki A.	Duluth
† Lipinski, Stanley W.	Memphis, Tenn.
Litman, Samuel N.	Duluth
McCarthy, Paul D.	Ely
McCoy, Mary K.	Duluth
McDonald, Archibald	Duluth
McDonald, Owen G.	Duluth
McHaffie, Orval L.	Duluth
McKenna, John J.	Virginia
McKenna, Maurice J.	Grand Rapids
McNutt, John R.	Duluth
MacRae, Gordon C.	Duluth
Magnay, Fredolph H.	Duluth
Magraw, Richard M.	Minneapolis
Malmstrom, John A.	Virginia
Marchley, Walter J.	Minneapolis
Marrone, Patrick H.	Duluth
Martin, Webster C.	Duluth
Martin, William B.	Duluth
Mast, Frederic L.	Chisholm
Mayne, Roy M.	Nothoming
Mead, Charles H.	Duluth
Merriman, Lloyd L.	Duluth
Miettunen, John B.	Chisholm
Moe, Thomas	Moose Lake
Moehring, Henry G.	Duluth
Mollers, Theodore P.	Soudan
Monroe, Paul B.	Cloquet
Monserud, Nels O.	Cloquet
Morsman, L. William	Hibbing
Moyer, John B.	Duluth
Munson, Martin S.	Barnum
Murray, Robert A.	Hibbing
Nakamura, James Y.	Deer River
Neff, Walter S.	Virginia
Nelson, Robert L.	Duluth
Nicholson, Murdoch A.	Duluth
Nisius, George F.	Duluth
Norberg, Carl E.	Cloquet
Nollet, Donald J.	Hibbing
Nutting, Roland E.	Duluth
O'Neill, John C.	Duluth
Olson, Albert E.	Duluth
Olson, Archie O.	Duluth
Owens, Ben P.	Hibbing
† Paciotti, Vincent J.	Minneapolis

## COUNTY SOCIETY ROSTER

Papermaster, Ralph	Two Harbors	Sanford, John B.	Chicago, Illinois	Strobel, William G.	Duluth
Parson, E. Irvine	Duluth	Sarf, Oliver E.	Duluth	Sutherland, Harry N.	Ely
Pasek, Antone W.	Cloquet	Sax, Milton H.	Duluth	Swedberg, William A.	Duluth
Patch, Orien B.	Duluth	Sax, Simon G.	Duluth	Swenson, Arnold O.	Duluth
Pearshall, R. P.	Virginia	Schirber, Martin J.	Grand Rapids	Teich, Kenneth W.	Duluth
Petersen, Roy C.	Duluth	Schmid, John F.	Duluth	Terrell, Bernard J.	Nopeming
Pennie, Daniel F.	Duluth	Schneider, Laurence E.	Duluth	Tetlie, James P.	Duluth
Peterson, Edward N.	Virginia	Schroder, C. H.	Pottstown, Penn.	Thomas, John V.	Duluth
Peterson, John H.	Duluth	Schweiger, Theodore R.	Hibbing	Thouin, Laurence G.	Hibbing
Pierce, Jack R.	Virginia	Seashore, R. T.	Duluth	Tingdale, Carlyle	Hibbing
Power, John E.	Duluth	Sher, David A.	Virginia	Tomhave, Wesley G.	Hibbing
Power, John E., Jr.	Duluth	Shirai, Shohei	Coleraine	Toseland, Noel E.	Duluth
Puumala, Reino H.	Cloquet	Siegel, John S.	Virginia	Tuohy, Edward L.	Santa Barbara, Calif.
Raadquist, Charles S.	Hibbing	Sinamarck, Andrew	Hibbing	Urberg, Sofie E.	Duluth
Raattama, John W.	Nashawauk	Sisler, Clifford E.	Grand Rapids	Van Ryzin, Donald J.	Duluth
Rajala, Arnold I.	Grand Rapids	Smith, Cyril M.	Duluth	Walder, Harold J.	Duluth
Reed, Paul	Virginia	Smith, Wallace R.	Grand Marais	Walker, Alfred E.	St. Paul
Richter, David J.	Virginia	Snyder, Omer E.	Ely	Wallace, Martin O.	Duluth
Rokala, Henry E.	Virginia	Spang, Anthony J.	Duluth	Walter, Frederick H.	International Falls
Rowe, Olin W.	Duluth	Spang, James S.	Duluth	Wheeler, Daniel W.	Duluth
Rowles, Everett K.	Coleraine	Spang, William M.	Duluth	Williams, Bruce F. P.	Duluth
Rudie, Peter S.	Duluth	Stein, William A.	Ely	Winter, John A.	Duluth
Rudie, William D.	Duluth	Storsteen, Kenneth A.	Duluth	Wolff, John M.	Duluth
Rundquist, John M.	Duluth	Strathern, Moses A.	Gilbert	Young, Thomas O.	Duluth
Ryan, William J.	Duluth	Strauss, Eugene C.	Duluth	Zemmers, Roberts	Duluth
Sach-Roatitz, Alvan	Moose Lake	Streitz, John M.	Duluth	Zupanc, Edward	Duluth
Salter, Reginald A.	Virginia	Strewler, Gordon J.	Duluth		

## **SCOTT-CARVER COUNTY MEDICAL SOCIETY**

## **Scott and Carver Counties**

**Regular Meetings, third Wednesday of every month, except July and August.**

**Annual Meeting, third Wednesday in June.  
Number of Members 31**

### **Number of Members—31**

<i>President</i>		
STAHLER, PAUL A.	Jordan	
<i>Secretary</i>		
RIESCHL, ELIZABETH K.	Jordan	
 <i>Editorial Staff</i>		
Bratholdt, James W.	Watertown	
Buck, Frederick H.	Shakopee	
Cervenka, Charles F.	New Prague	
Clarke, John W.	Watertown	
Doherty, Elmer M.	New Prague	
Hebeisen, Milton B.	Shakopee	
Heinz, Ivy B.	Shakopee	
 <i>Business Staff</i>		
Heinz, Lawrence H.	Shakopee	
Heinzerling, Carl R.	Chaska	
Juergens, Herman M.	Belle Plaine	
Kucera, Stanley T.	Northfield	
Larson, Leighton W.	Waconia	
Luukk, Olaf	Montgomery	
† Martin, Thomas Philip	Arlington	
Nagel, Harold D.	Minneapolis	
Ninneman, Newton N.	Waconia	
† Novak, Edward E.	New Prague	
Olson, Chester J.	Belle Plaine	
§ Pearson, Bror F.	Shakopee	
 <i>Advertisers</i>		
Philip, David R.	Watertown	
Pogue, Richard E.	Watertown	
§ Ponteri, James E.	Shakopee	
Rieschl, Elizabeth K.	Jordan	
Rynda, Edwin R.	New Prague	
Sawaryniuk, Iwan	Waconia	
Schimelpfenig, George T.	Chaska	
Simmonds, Harry N.	Prior Lake	
§ Simons, Bernard H.	Chaska	
Stahler, Paul A.	Jordan	
† Westerman, Alvin	Montgomery	
§ Westerman, Fred	Montgomery	

## **SOUTHWESTERN MINNESOTA MEDICAL SOCIETY**

## **Cottonwood, Jackson, Murray, Nobles, Pipestone, and Rock Counties**

**Regular Meetings, on call. Annual Meeting, October.**

### Number of Members—63

<i>President</i>		Brewster
CHRISTIANSEN, HAROLD A.	Jackson	Lake Wilson
<i>Secretary</i>		Worthington
HEIBERG, OLAF M.	Worthington	Worthington
Arnold, Elmer W.	Adrian	Windom
Bader, J. L.	Slayton	Windom
Basinger, Harold P.	Mountain Lake	Windom
Basinger, Harvey R.	Mountain Lake	Windom
Basinger, Homer P.	Windom	Windom
Bekcerking, Gerrit	Edgerton	Jackson
Benjamin, Walter G.	Pipestone	Pipestone
Bofenkamp, F. William	Luverne	Worthington
Boone, Ervin S.	Luverne	Worthington
Brown, Alexander H.	Pipestone	Worthington
Buresh, Kenneth L.	Columbus, Ga.	Luverne
Carlson, John V.	Westbrook	Worthington
Christiansen, Harold A.	Jackson	Worthington
Dawson, Lorin D.	Worthington	Worthington
Dokken, James H.	Windom	Worthington
Doman, Victor W.	Lakefield	Worthington
Hallin, Roger P.	Worthington	Worthington
Halloran, Walter H.	Jackson	Worthington
Halpern, David J.		Worthington
Harada, Thomas T.		Worthington
Harrison, Percy W.		Worthington
Heiberg, Olaf M.		Worthington
Hoyer, Ludolf J.		Windom
Karleén, Bernard N.		Jackson
Keyes, Robert W.		Pipestone
Kilbide, Edwin A.		Worthington
Koeneck, Fred H.		Lakefield
Kotval, Russell J.		Pipestone
Laiola, Leslie A.		Adrian
Lohmann, John G.		Pipestone
Maitland, Edwin T.		Jackson
Manson, Frank M.		Worthington
Martin, Albert C.		Luverne
Minge, Raymond K.		Worthington
Nealy, Donald E.		Adrian
Nicholson, Richard W.		Heron Lake
Nywall, Dean D.		Slayton
Odland, Donald M.		Luverne
Pankratz, Peter J.		Mountain Lake
Patterson, Hugh D.		Slayton
Pierson, Roy F.		Slayton
Piper, William A.		Mountain Lake
Plucker, Milton W.		Worthington
Ritzinger, Fredk. R.		Randolph Air Force Base, Texas
Robinet, Robert W.		Worthington
Rohrer, Christian A.		Worthington
Rose, John T.		Lakefield
Runkquist, Richard K.		Westbrook
Sawtell, Robert R.		Worthington
Schade, Fredk. L.		Worthington
Schutz, Elmer S.		Mountain Lake
Sherman, Charles L.		Luverne
Slater, Sidney A.		Worthington
Sogge, Ludwig L.		Windom
Stan, John H.		Worthington
Stanley, Court R.		Richfield
Stevenson, Basil M.		Fulda
Stratte, Harold C.		Windom
Vix, Vernon A.		Worthington
Wells, Walter B.		Jackson
Williams, Charles A.		Pipestone
Williams, Leon A.		Minneapolis
Zeller, Nicholas H.	New York, N. Y.	Minneapolis

## **STEARNS-BENTON COUNTY MEDICAL SOCIETY**

## **Stearns and Benton Counties**

**Regular Meetings, third Thursday of month. Annual Meeting, December.**

### **Number of Members—68**

<i>President</i>			
SISK, HARVEY E.	St. Cloud	Broker, Henry M.	St. Cloud
<i>Secretary</i>		Buscher, Julius C.	St. Cloud
PETERSEN, ROBERT T.	St. Cloud	Cesnik, Robert J.	St. Cloud
Alden, W. Charles	Kimball	Chadbourne, Wayne A.	St. Cloud
Anderson, Ernest M.	St. Cloud	Clark, Harry B.	St. Cloud
Andrews, Bernice F.	Holdingford	Cleaves, William D.	Sauk Centre
Autrey, William A.	St. Cloud	Donaldson, Charles S.	St. Cloud
Baumgartner, Florian H.	Albany	Dredge, Thomas E.	St. Cloud
Beuning, John B.	St. Cloud	DuBois, Julian F., Sr.	Sauk Centre
Brigham, Charles F., Sr.	St. Cloud	DuBois, Julian F., Jr.	Sauk Centre
Brigham, Charles F., Jr.	St. Cloud	Evans, Leslie M.	Sauk Rapids
Fidelman, Norman E.		Fidelman, Norman E.	Foley
Fleming, Thomas N.		Fleming, Thomas N.	St. Cloud
Gaida, Joseph B.		Goehrs, Gilman H.	St. Cloud
Goehrs, Gilman H.		Goehrs, Henry W.	St. Cloud
Grant, John C.		Grant, John C.	Sauk Centre
Haberlein, Emil		Haberlein, Emil	Osakis
Halenbeck, Phillip L.		Halenbeck, Phillip L.	St. Cloud
Hedlund, Charles J.		Hedlund, Charles J.	Minneapolis
Henry, Clarence J.		Henry, Clarence J.	Milaca
Hoehn, David		Hoehn, David	Milaca
Jones, Richard N.		Jones, Richard N.	Holdingford
Keith, Paul J.		Keith, Paul J.	Milaca

## COUNTY SOCIETY ROSTER

Duluth	Kelly, John F.	Cold Spring	Meyer, Anthony A.	Melrose	Richards, William B.	St. Cloud
Ely	Koenig, Robert P.	Geneva, N. Y.	Milhaupt, E. N.	St. Cloud	Salk, Richard J.	Albany
Duluth	Kohler, Delphin W.	Tacoma, Wash.	Mueller, Rudolph B.	Richmond	Sandven, Nels O.	Paynesville
Duluth	Koop, Herman	Cold Spring	Musachio, Nicholas F.	Foley	Schatz, Francis J.	St. Cloud
Duluth	Kuhmann, Lawrence B.	Melrose	Myre, Clifford R.	Paynesville	Sherwood, George E.	Kimball
Duluth	LaFond, Edward M.	St. Cloud	Neils, Vernon E.	Sauk Rapids	Sisk, Harvey E.	St. Cloud
Duluth	Lewis, Claude B.	St. Cloud	Nessa, Curtis B.	St. Cloud	Stangl, Philip E.	St. Cloud
Duluth	Libert, John N.	St. Cloud	Nietfeld, Aloys	Sauk Centre	Thuringer, Carl B.	St. Cloud
Duluth	Lindeman, R. J.	Paynesville	O'Keefe, James P.	St. Cloud	Walfred, Karl A.	St. Cloud
Duluth	Loe, Louis A.	St. Cloud	Petersen, Robert T.	St. Cloud	Wenner, Waldemar T.	St. Cloud
Duluth	Luckemeyer, Carl J.	St. Cloud	Phares, Otto C.	St. Cloud	Wittrock, Louis H.	Watkins
Calif.	McDowell, John P.	St. Coud	Raetz, Sylvester J.	Maple Lake	Zachman, Albert H.	Melrose
Duluth			Reif, Henry J.	St. Coud		

## STEELE COUNTY MEDICAL SOCIETY

Steele County

Regular Meetings, called by the officers. Annual Meeting, January.

Number of Members—22

<i>President</i>						
ARNESEN, JOHN F.		Watsonna	§ Fischer, John R.	Blooming Prairie	§ McIntyre, John A.	Watsonna
<i>Secretary</i>			§ Halvorsen, Daniel K.	Watsonna	† Melby, Benedict	Blooming Prairie
DEWEY, DONALD H.		Watsonna	Hartung, Elmer H.	Claremont	Morehead, Dewey E.	Watsonna
Anderson, Franklin C.		Watsonna	Henry, Kenneth G.	Watsonna	Olson, Albert J.	Watsonna
Arnesen, John F.		Watsonna	Honath, Donald H.	Watsonna	Roberts, Oliver W.	Watsonna
Dewey, Donald H.		Watsonna	Kulstad, Oscar	Dodge Center	Schaefer, Joseph F.	Watsonna
Ertel, Edward Q.		Ellendale	† Kurtin, Joseph J.	New York, N. Y.	Senn, Edward W.	Watsonna
			Lundquist, Curt W.	Watsonna	Stransky, Theodore W.	Watsonna
			§ McEnaney, Clifford T.	Watsonna	† Wilkowske, Rudolph J.	Watsonna

## UPPER MISSISSIPPI MEDICAL SOCIETY

Aitkin, Beltrami, Cass, Clearwater, Crow Wing, Hubbard, Koochiching,  
Lake of the Woods, Morrison, Todd and Wadena Counties

Annual Meeting, January.

Number of Members—77

<i>President</i>						
DAVIS, LUTHER F.		Wadena	Garlock, DeWitt W.	Highlands, Calif.	Meller, Maurice	Brainerd
<i>Secretary</i>			Ghostley, Mary C.	Bemidji	Mortenson, Howard O.	Menahga
BADEAUX, GEORGE I.		Brainerd	† Gilmore, Rowland	Crookston	Mosby, Maurice E.	Long Prairie
Anderson, Werner W.		Brainerd	Grihn, John W.	Bemidji	Mulligan, Arthur M.	Brainerd
Badeaux, George I.		Brainerd	Groschupf, Theodore P.	Bemidji	Nelson, Nesmith P.	Minneapolis
Bender, James H.		Brainerd	§ Grose, Frederick N.	Clarissa	O'Leary, John B.	Brainerd
Benson, Alfred H.		Little Falls	Halme, William B.	Watena	Olson, Lillian A.	Ah-gwah-ching
Bolstad, Owen C.		Little Falls	§ Hanover, Ralph D.	International Falls	Parker, C. W.	Watena
Borgerson, Arthur H.		Long Prairie	Hartjen, Jason K.	Bemidji	Parker, Warren E.	Sebeka
Brown, Hector M.		Texas	Higgs, Walter W.	Park Rapids	Pedersen, Robert L.	Brainerd
Cardle, George E.		Brainerd	Hoganson, Donald E.	Bemidji	Pierce, Charles H.	Watena
Closut, Frederick C.		Aitkin	House, Zachariah E.	Burbank, Calif.	Quanstrom, Virgil E.	Brainerd
Cook, Jay M.		Staples	Hughes, Bernard J.	Brainerd	Ringle, Otto F.	Walker
Coombs, Carl H.		Cass, Lake	Johnson, Douglas L.	St. Paul	Schmitz, Glen P.	Little Falls
Craig, Clair C.		International Falls	Johnson, Einar W.	Bemidji	Simons, Edwin J.	St. Paul
Cushing, Robert L.		Brainerd	Johnstone, William W.	Ah-gwah-ching	Skafie, William F.	Little Falls
Davis, Lloyd T.		Wadena	Kanne, Earl R.	Brainerd	Stein, Raymond J.	Pierz
Davis, Luther F.		Wadena	Kinports, Edward B.	International Falls	Stoy, Robert A.	Little Falls
Deweese, Wilford J.		Bemidji	Knight, Edwin G.	Swanville	Thabes, John A., Jr.	Brainerd
Eller, John		Park Rapids	Larson, LeRoy	Bagley	Watson, Alexander M.	Royalton
Erickson, Alvan O.		Long Prairie	Lee, Hubert W.	Brainerd	Watson, Percy T.	Miami, Fla.
Fitzsimons, William E.		Brainerd	Lenzar, Albert J.	Browerville	Watson, Sydney W.	Royalton
Forster, George M. A.		Little Falls	Loftstrom, Dennis E.	Pine River	Whittemore, Dexter D.	Bemidji
Franklin, Gordon W.		Northome	Lund, Werner J.	Brainerd	Will, Charles B.	International Falls
Garlock, Arthur V.		Bemidji	Lundsten, Leslie C.	Staples	Will, W.	Bertha
			§ McLane, William O.	Brainerd	Williams, M. M.	Ah-gwah-ching
			MacDonald, Roger A.	Littlefork	Wilson, Robert E.	No. Little Rock, Ark.

## WABASHA COUNTY MEDICAL SOCIETY

Wabasha County

Annual Meeting, first Thursday after first Monday in October.

Number of Members—14

<i>President</i>						
BOUQUET, BERTRAM J.		Wabasha	§ Bowers, Robert N.	Lake City	§ Gjerde, William P.	Lake City
<i>Secretary</i>			† Collins, Joseph S.	Wabasha	Glabre, Robert A.	Plainview
FLESCHE, BERNARD A.		Lake City	Ekstrand, LeRoy M.	Wabasha	§ Mahle, Donald G.	Plainview
Bayley, E. Covell		Lake City	Ellis, Earl Wm.	Elgin	§ Ochsner, Clarence G.	Wabasha
Bouquet, Bertram J.		Wabasha	Flatte, John B.	Wabasha	† Reagle, W. H.	Los Angeles, Calif.
			Flesche, Bernard A.	Lake City	§ Sontag, David W.	Lake City

## WASECA COUNTY MEDICAL SOCIETY

Waseca County

Regular Meetings, as decided. Annual Meeting, January.

Number of Members—9

<i>President</i>						
HOTTINGER, RAYMOND C.		Janesville	§ Davis, Raymond D.	Waseca	§ McIntire, Homer M.	Waseca
<i>Secretary</i>			§ Florine, Martin C.	Janesville	Normann, Stephen T.	Waseca
FLORINE, MARTIN C.		Janesville	† § Gallagher, Bernard J.	Waseca	Oeljen, Siegfried C. G.	Waseca
			§ Hottinger, Raymond C.	Janesville	Olds, George H.	New Richmond
					Swenson, Orvie J.	Waseca

## COUNTY SOCIETY ROSTER

### WASHINGTON COUNTY MEDICAL SOCIETY

Washington and Dakota Counties

Regular Meetings, second Tuesday in each month. Annual Meeting, December.

Number of Members—21

<i>President</i>	JUST, HERMAN J.	Hastings
<i>Secretary</i>	JUERGENS, MANLEY F.	Stillwater
§ Carlson, Russel E.	Stillwater	
Fasbender, Herman T.	Hastings	
¶ Holcomb, Joel T.	Marine-on-St. Croix	

† Hooper, Worth A.	Long Beach, Calif.	
† Humphrey, Wade R.	Stillwater	
§ Jenson, James E.	Stillwater	
Josewski, Raymond J.	Stillwater	
§ Juergens, Manley F.	Stillwater	
Just, Herman J.	Hastings	
Kiolbasa, Edward B.	Stillwater	
Kulzer, Norbert J.	Hastings	
¶ McCarten, Francis M.	Stillwater	

Mensheha, Nicholas.	Forest Lake	
† Poirier, Joseph A.	Forest Lake	
Ruggles, George M.	Forest Lake	
Sherman, Carnot H.	Bayport	
Stehr, John W.	Stillwater	
Torghele, John K.	Hastings	
Van Meier, Henry.	Stillwater	
Weiss, Carl A.	Hastings	
Wood, Lloyd T.	Forest Lake	

### WEST CENTRAL MINNESOTA MEDICAL SOCIETY

Big Stone, Pope, Stevens, and Traverse Counties

Regular Meetings, one Tuesday in March, May, September and November.

Annual Meeting, November.

Number of Members—26

<i>President</i>	HEDEMARK, HOMER H.	Ortonville
<i>Secretary</i>	KARN, JACOB F.	Ortonville
§ Arneson, Arthur I.	Morris	
Behmeler, Frederick Wm.	Morris	
¶ Bergan, Otto	Clinton	
¶ Bolsta, Charles	Ortonville	
Bucher, Foster D.	Starbuck	

† Eberlin, Edward A.	Glenwood	
§ Eide, O. A.	Hancock	
† Elsey, James R.	Glenwood	
‡ Giesen, Allan F.	Starbuck	
Good, Roy H.	Glenwood	
Hedemark, Homer H.	Ortonville	
Hedemark, Truman A.	Ortonville	
Karn, Jacob F.	Ortonville	
§ Kooda, Jennings C.	Morris	
Lee, Gordon E.	Glenwood	
¶ Letson, Robert D.	Glenwood	

§ Lindberg, Alfred L.	Wheaton	
† Linde, Herman	Cyrus	
Magnuson, Allen E.	Wheaton	
Merrill, Robert W.	Morris	
Muir, Walter F.	Brown Valley	
Oliver, Irwin L.	Graceville	
Ransom, Matthias L.	Hancock	
¶ Rossberg, Raymond A.	Morris	
Swedenburg, Paul A.	Glenwood	
Watson, Robert M.	Morris	
Winge, H. C.	Wheaton	

### WINONA COUNTY MEDICAL SOCIETY

Winona County

Regular Meetings, first Monday in January, April, July and October.

Annual Meeting, first Monday in January.

Number of Members—29

<i>President</i>	FINKELBURG, WILLIAM O.	Winona
<i>Secretary</i>	WILSON, LOUIS J.	Winona
Boardman, Dalmon V.	Winona	
Christensen, Eli E.	Winona	
Finkelburg, William O.	Winona	
Hartwich, Roger F.	Winona	
Heise, Carl vR.	Winona	
Heise, Paul vR.	Winona	

Heise, Philip vR.	Winona	
Hughes, Sidney O.	Winona	
Johnston, Leonard F.	Winona	
Keyes, John D.	Winona	
Loomis, George L.	Winona	
† McLaughlin, Edmund M.	Winona	
Mattison, Percy A.	Winona	
¶ Meinhert, Albert E.	Winona	
Neumann, Conrad A.	Winona	
¶ Page, Raymond L.	St. Charles	
¶ Robbins, Charles P.	Winona	

Roemer, Henry J.	Winona	
Rogers, Charles W.	Winona	
Rollins, Pat	St. Charles	
Satterlee, Howard W.	Lewiston	
Schmidt, Hilmar R.	Gloversville, N. Y.	
Tweedy, John A.	Winona	
Vollmer, Frederick J.	Winona	
Wilson, Louis J.	Winona	
Wilson, Rolland H.	Winona	
Woltjen, Myron J.	Rushford	
Younger, Lewis I.	Winona	

### WRIGHT COUNTY MEDICAL SOCIETY

Wright County

Regular Meetings, first Tuesday of every second month.

Annual Meeting, first Tuesday in March.

Number of Members—17

<i>President</i>	GUILPOILE, PIERRE J.	Delano
<i>Secretary</i>	CATLIN, THEODORE J.	Buffalo
Boardman, Jose A.	New York, N. Y.	
¶ Anderson, Waldo P.	Buffalo	

§ Bendix, Lester H.	Annandale	
¶ Catlin, John J.	Buffalo	
Catlin, Theodore J.	Buffalo	
Ellison, Frank E.	Monticello	
Fetzek, Albert D.	Great Falls, Montana	
Greenfield, Wm. Theodore.	Cokato	
Grundset, Ole J.	Montrose	

Guilfoile, Pierre J.	Delano	
Hall, William E.	Maple Lake	
Hart, William E.	Monticello	
Purves, G. Harland.	Buffalo	
Sandeens, Robert M.	Buffalo	
Smorstok, Matthew B.	Monticello	
Thielien, Robert D.	Saint Michael	
Thomas, William H.	Howard Lake	

# Alphabetic Roster

## Key to Symbols:

\*Deceased; †Associate, Junior Associate, Residency, Affiliate or Life Member; ‡In Service

Aanes, Almer M.	Red Wing	Arnold, Elmer Wm.	Adrian	Beahr, Oliver H.	Rochester
*Aaro, Leonard A.	Rochester	Arquist, Andrew S.	St. Paul	Beals, Hugh	La Jolla, Calif.
Abraham, Arden L.	Duluth	Arny, Frederick P.	Minneapolis	Beaton, J. Gordon	Northfield
Abramson, Milton	Minneapolis	Arvidson, Carl G.	Minneapolis	Beck, Charles J.	No. St. Paul
*Abullarade, Jose A.	New York, N. Y.	Arzt, Philip K.	St. Paul	†Becker, Arнетta M.	Lincoln, Nebr.
Achor, Richard W. F.	Rochester	Asta, Joseph J.	Duluth	Becker, Frederick T.	Duluth
Adair, Albert F., Jr.	Rochester	Athens, Alvin G.	Duluth	Beckering, Gerrit	Edgerton
Adams, Bertram S.	Hibbing	Atmore, William G.	Rochester	Beckett, Victoria Ling	Detroit, Mich.
*Adams, R. Charles	Rochester	Aufderheide, Arthur C.	Duluth	Bedford, Edgar Wm.	Minneapolis
Addy, Edward R.	Gilbert	Aulick, Ernest J.	Belgrade	Beech, Raymond H.	St. Paul
Adkins, Charles D.	Minneapolis	*Aune, Martin	Minneapolis	Beek, Harvey O.	St. Paul
Adkins, Galen H.	Anoka	Aurand, William H.	Minneapolis	Beer, John J.	St. Paul
Affeldt, Daniel E.	Kasson	Aurelius, J. Richards	St. Paul	Behmler, Frederick Wm.	Morris
Aga, John H.	Rochester	Ausman, Duane R.	St. Paul	Behling, Frederick L.	Rochester
Ahern, Eugene	Minneapolis	*Austrian, Sol	St. Paul	Behr, Orlo K.	Crookston
Ahlf, Jacob J.	Caledonia	Autrey, William A.	St. Cloud	Beinstein, Samuel	Minneapolis
Ahola, Kenneth E.	Hibbing			Beiswanger, Richard H.	Minneapolis
*Ahrens, Albert E.	St. Paul			Bell, Charles C.	St. Paul
Ahrens, Curtis F.	Duluth			†Bell, E. T.	Minneapolis
Ahrens, Robert M.	St. Paul			Bellomo, James	St. Paul
*Aitkens, Herbert B.	LeCenter	‡Baars, Conrad W.	Camp Cook, Calif.	Bellville, Titus P.	Minneapolis
Akins, Willard M.	Red Wing	Babb, Frank S.	St. Paul	Belzer, Meyer S.	Minneapolis
Albrecht, H. H.	Chicago City	Backus, Reno W.	Nopeming	Bender, James H.	Brainerd
Alcorn, William J.	Wabasso	Bacon, Donald K.	St. Paul	Benda, Lester H.	Annandale
*Alden, John F.	St. Paul	Badeaux, George I.	Brainerd	†Benedict, William L.	Rochester
Alden, W. Charles	Kimball	Bader, J. L.	Slayton	Benell, Otto E.	Virginia
Alexander, Harlan A.	Minneapolis	Baer, Walter	St. Paul	Benepo, James L.	St. Paul
Alexander, John D., Jr.	Rochester	Baggensost, Archie H.	Rochester	Benesh, Louis A.	Minneapolis
Aling, Charles A.	Minneapolis	Baggensost, Osmond J.	Minneapolis	Benjamin, Edwin G.	Minneapolis
Allen, Edgar V. N.	Rochester	Bagley, Charles M.	Duluth	Benjamin, Harold G.	Minneapolis
Allen, George S.	Cannon Falls	Bagley, Elizabeth C.	Duluth	Benjamin, Walter G.	Pipestone
Allen, John H.	Montevideo	Bagley, Russell W.	Minneapolis	Bennett, Warren A.	Rochester
Allison, David D.	Duluth	Bagley, William R.	Duluth	*Bennion, P. H.	Isway, Mont.
Alpert, Abraham E.	Virginia	Bahn, Robert C.	Rochester	Benson, Alfred H.	Little Falls
Althausen, Theodore L.	Minneapolis	Baich, Velemir M.	Coleraine	Benthack, Elaine M.	St. Paul
Altow, Hugo O.	Coral Gables, Fla.	Bain, Robert C.	Rochester	Bentley, Norman P.	St. Paul
Altow, Donald G.	Bird Island	Bair, Hugo L.	Rochester	Bepko, Marie K.	Duluth
Amatuzio, Donald S.	Minneapolis	Baird, Joseph W.	Minneapolis	Berdez, George L.	Roseau
Amberg, Samuel	Rochester	Baken, Melvin P.	Lake Crystal	Berg, Arnold M.	Wayzata
*Ambrus, Laszlo	New York, New York	Baker, Abe B.	Minneapolis	Berg, Clinton C.	Clinton
Anerongen, W. W.	St. Paul	Baker, Alfred T.	Minneapolis	†Bergan, Otto	Duluth
Anderson, Howard A.	Rochester	Baker, George S.	Rochester	Berge, David O.	Roseau
Anderson, Silas C.	Minneapolis	Baker, Harry R.	Rochester	Berge, Harry L.	Mora
Anderson, Arnold S.	St. Louis Park	Baker, Hillier L., Jr.	Rochester	Berge, Kenneth G.	Rochester
Anderson, Chester A.	Hector	Baker, Jeannette L.	Fergus Falls	Berger, Alex G.	Minneapolis
Anderson, Chester A.	Madison	Baker, Milton E.	Minneapolis	Bergh, George S.	Minneapolis
Anderson, David M.	Minneapolis	Baker, Norman H.	Fergus Falls	Bergh, Solveig M.	Minneapolis
Anderson, David P.	Austin	Bakkila, Henry E.	Duluth	Berglund, Eldor B.	Minneapolis
*Anderson, Edward D.	Minneapolis	Balcome, Milton M.	St. Paul	Bergman, Oscar B.	St. James
Anderson, Ernest M.	St. Cloud	Baleisic, Peter	Minneapolis	Berquist, James R.	Minneapolis
Anderson, Frank J.	Minneapolis	Balfour, Donald C.	Rochester	Berkman, David M.	Orono
Anderson, Franklin C.	Owatonna	Balfour, William M.	Rochester	Berkwitz, Nathaniel J.	Minneapolis
Anderson, Harold J.	Austin	Balkin, Samuel G.	Minneapolis	Berlin, Anthony S.	Hallock
Anderson, James J.	Mankato	Balogh, Charles J.	Minneapolis	Berman, Reuben	Minneapolis
Anderson, John T.	Minneapolis	Bank, Harry E.	San Francisco, Calif.	Bernatz, Philip E.	Rochester
Anderson, John W.	Blue Earth	Banner, Edward A.	Rochester	Bernier, M. J.	No. St. Paul
Anderson, Karl W.	Minneapolis	Barber, Tracy E.	Austin	Bernstein, Irving C.	Minneapolis
Anderson, Margaret C.	Mankato	Barber, Tracy E.	Duluth	Bernstein, William C.	St. Paul
Anderson, Mark J.	Rochester	Bardon, Richard	Duluth	Bessesen, Alfred N., Jr.	Minneapolis
Anderson, Markham J., Jr.	Rochester	Bargen, J. Arnold	Rochester	Bessesen, Daniel H.	Olivia
Anderson, Milton W.	Rochester	Barker, John D.	Duluth	Beuning, John B.	St. Cloud
Anderson, Richard E.	Willmar	Barker, Nelson W.	Rochester	*Beyer, Eugene F.	San Francisco, Calif.
Anderson, Roger L.	Minneapolis	Barres, Arlie R.	Rochester	Bianco, Anthony J.	Duluth
Anderson, U. Schuyler	Minneapolis	Barres, Richard E.	Aurora	†Bianco, Anthony J., Jr.	Rochester
Anderson, Waldo P.	Buffalo	Barrett, Joseph M.	St. Paul	Bickel, Joseph F.	St. Paul
Anderson, Wallace E.	Minneapolis	Barney, Leon A.	Duluth	Bickel, William H.	Rochester
Anderson, Wallace E.	Clearbrook	Baroofsky, Ivan D.	St. Paul	Biedermann, Jacob	Thief River Falls
Anderson, Wallace R.	Austin	Barr, James S.	Elmore	Bieter, Raymond N.	Minneapolis
Anderson, Werner W.	Brainerd	Barr, Lowell C.	Albert Lea	*Bigelow, Charles E.	Dodge Center
Anderson, William H.	Minneapolis	Barr, Maxwell M.	Minneapolis	Bigler, Earl E.	Perham
Anderson, William T.	Minneapolis	Barr, Robert N.	Minneapolis	Bieler, Ivan E.	Perham
Andreassen, Einar C.	St. Paul	Barr, Ronald W.	Montevideo	Bikla, Paul J.	Minneapolis
Andreassen, Rolf L.	Minneapolis	Barrett, Earl E.	Duluth	Billings, Ralph E.	Franklin
Andresen, Karl D'A.	Minneapolis	Barren, Jesse J.	Minneapolis	Binder, Manuel R.	Minneapolis
Andrew, William F.	Duluth	Barron, Moses	Minneapolis	Binet, Henry E.	Grand Rapids
Andrews, Bernice F.	Huntingford	Barron, S. Steven.	Minneapolis	Binger, Henry E.	Phoenix, Ariz.
Andrews, Robert S.	Minneapolis	Barry, Maurice J., Jr.	Rochester	*Birkhead, Newton C.	Rochester
*Andrews, Roy N.	Mankato	Barnes, Nellie O. N.	St. Paul	Black, B. Marden.	Rochester
Angker, Frank J.	Mankato	Bartholomew, Lloyd G.	Rochester	Black, Earl J.	St. Paul
Antonow, Arthur M.	Virginia	Bartzen, Peter J.	Duluth	Black, William A.	New Ulm
Arends, Archabald L.	Minneapolis	Basinger, Harold P.	Windom	Blackburn, Charles M.	Rochester
Arey, S. Lane	Minneapolis	Basinger, Homer P.	Windom	Blackmore, Sidney C.	Biwabik
Arhelger, Stuart	Minneapolis	Bastron, James A.	Rochester	Blake, Allen J.	Hopkins
Arko, Joseph L.	Hibbing	Bauer, Eugene L.	St. Paul	Blake, James A.	Hopkins
Arlander, Clarence E.	Minneapolis	Bauer, Paul G.	Faribault	Blake, Paul S.	Hopkins
Arling, Leonard S.	Minneapolis	Baumgartner, Florian H.	Albany	†Blaike, Adam R.	Osakis
Arms, James J.	Minneapolis	Baxter, Stephen H.	Minneapolis	Blodell, Traugott J.	Osceo
Armstrong, Ralph S.	Winnebago	Bayley, E. Covell.	Lake City	Blomberg, Robert D.	Minneapolis
Arndt, Harry Wm.	Detroit Lakes	Bayrd, Edwin D.	Rochester	Blomberg, William R.	St. Paul
Arnesen, John F.	Owatonna	Beach, Northrop	Minneapolis	Bloom, Joseph	Silver Bay
Arneson, Arthur I.	Morris			Bloom, Norman B.	Minneapolis
Arnold, Anna W.	Minneapolis				

## ALPHABETIC ROSTER

Blumberg, Henry B.	Fairmont	Deer River	Chermak, Francis G.	International Falls
Blumenthal, Jacob S.	Minneapolis	Starbuck	Chester, Merrill D.	Minneapolis
Boardman, Dalton V.	Winona	Minneapolis	† Chesley, Albert J.	Minneapolis
† Bock, Ronald A.	St. Paul	Shakopee	Child, Sherman B.	Minneapolis
Bodaski, Albert A.	Tyler	St. Paul	Childs, Donald S., Jr.	Rochester
* Böckmann, Egil	St. Paul	Duluth	Chisholm, Tague C.	Minneapolis
Boehr, John J.	Minneapolis	Waterville	Chittum, John R.	Aura
Bofenkamp, Benjamin	Minneapolis	Rochester	Christensen, Clarence H.	Duluth
Bofenkamp, F. William	Luverne	St. Paul	Christensen, Eli E.	Winona
Bohn, Donald G.	Minneapolis	Minneapolis	† Christensen, Mentor	St. Paul
Boies, Lawrence R.	Minneapolis	Anoka	Christensen, Norman A.	Rochester
Bolender, Harold L.	St. Paul	St. Paul	† Christensen, Philip D.	St. Paul
Boline, Clifford A.	Battle Lake	St. Paul	Christiansen, Andrew	St. Paul
† Bost, Charles	Ortonville	St. Paul	Christiansen, Harold A.	Jackson
Bostad, Owen C.	Little Falls	Rochester	Christiansen, Bruce W.	Rochester
Bolz, J. Arnold	Grand Rapids	Columbus, Ga.	Christoferson, Kent W.	Rochester
Boman, Paul G.	Duluth	Rochester	Chunn, Stanley S.	Willmar
Bonello, Frank J.	St. Paul	Rochester	Ciriacy, Edward W.	Ely
Bonner, John L.	Eveleth	St. Paul	Clagett, O. Theron	Rochester
† Bonnet, John D.	Clovis, New Mexico	Eveleth	Clapp, Hubert D.	Crookston
Boody, George J., Jr.	Sandstone	Burkland, Edwin C.	Clark, Clarence L.	Duluth
Boone, Ervin S.	Luverne	Eveleth	Clark, Edward C.	Rochester
Booth, Albert E.	Minneapolis	Burlingame, David A.	Clark, Elizabeth A.	Duluth
† Booreen, Clifton A.	Minneapolis	Burmeister, Richard O.	Clark, Harry B.	St. Cloud
Borg, Joseph F.	St. Paul	Burnett, Joseph W.	Clark, Henry B., Jr.	Minneapolis
Borgerson, Arthur H.	Long Prairie	Burnham, Wesley H.	Clark, Ivan T.	Spring Valley
† Borgerson, Egbert J.	St. Paul	Minneapolis	Clark, Leslie Wm.	Duluth
Borman, Chauncey N.	Minneapolis	Albert Lea	Clark, Malcolm D.	Minneapolis
Borowicz, Leonard A.	Minneapolis	Milan	Clark, Clarke, John W.	Watertown
Bosland, Howard G.	Willmar	Burns, Floyd M.	Clay, Lyman B.	Minneapolis
Bossard, John W.	Rochester	Burns, M. Alpheus.	Claydon, Howard F.	Red Wing
† Bossert, Clarence S.	Mora	Burns, Robert M.	Cleaves, William D.	Sauk Centre
† Bowell, J. Thornton	Kenosha, Wis.	Johnson Townsend	† Clement, John B.	Lester Prairie
Botham, Richard J.	Rochester	Rochester	Clifford, George W.	Alexandria
Bottolfsen, Bottoli T.	Moorhead	St. Paul	Clifton, Theodore A.	Chaffield
Bouchelle, McLemore	Virginia	St. Paul	Closuit, Frederick C.	Aitkin
† Bouma, Lewis R.	St. Paul	St. Paul	Cochrane, Byron B.	St. Paul
Bouquet, Bertram J.	Wabasha	Butler, John K.	Cochrane, Ray F.	Minneapolis
Bouthilet, Florence J.	St. Paul	Butt, Hugh R.	Coddon, Walter D.	St. Paul
Bowen, Robert L.	Hibbing	Butturff, Carl R.	Coe, John I.	Minneapolis
Bowers, Dorrance	Rochester	Butzer, John A.	Cohen, Bernard A.	Minneapolis
Bowers, Gordon G.	Minneapolis	Butzer, John F.	Cohen, Ellis N.	Minneapolis
Bowers, Robert N.	Lake City	Buzzelle, Leonard K.	Cohen, Ephraim B.	Minneapolis
Boyd, David A., Jr.	Rochester		Cohen, Maynard M.	St. Paul
† Boyd, George K.	Pittsburgh, Pa.		Cohen, Sumner S.	Oak Terrace
† Boyea, Lyle H.	Babbitt		Colby, M. Y., Jr.	Rochester
Boyer, George S.	Crookston		Colby, Woodard L.	St. Paul
* Boyer, Samuel H., Sr.	Duluth		Cole, James S.	Minneapolis
Boyer, Samuel H., Jr.	Duluth		Cole, Wallace H.	St. Paul
Boynton, Ruth E.	Minneapolis		Coleman, John B.	St. Paul
Boysen, Herbert	Madelia		Coll, James J.	Duluth
Boysen, Peter	Bemidji		† Collier, Henry G., St. Peterburg, Fla.	Duluth
† Bozanich, Milosh S.	Rochester		Collins, Arthur N.	Duluth
Braasch, John W.	Rochester		Combacker, Leon C.	Wabasha
† Braasch, William F.	Rochester		Comfort, Mandred W.	Rochester
Bradley, Nelson J.	Willmar		Compton, Russell F.	Rochester
Brand, George D.	St. Paul		* Condit, William H.	Minneapolis
† Brand, William A.	Redwood Falls		Conley, Francis W.	Duluth
Brandenburg, Robert O.	Rochester		Conley, Robert H.	Mankato
† Branham, Donald S.	Deer Park, Wis.		Connolly, Coleman J.	St. Paul
Bratrud, Arthur F.	Watertown		Connolly, Daniel C.	Rochester
Bratrud, Theodore E.	Thief River Falls		Collins, Joseph P.	So. St. Peterburg
Bratrud, Earl J.	Minneapolis		Connor, Charles E.	St. Paul
Braun, Robert A.	St. James		Cook, C. Kenneth.	St. Paul
† Bray, Ohrmund C.	Grand Rapids		Cook, Edward N.	Rochester
Bray, Elwyn R.	St. Paul		Cook, James A.	Staples
Bray, Philip N.	Duluth		Cook, Roderick W., Jr.	Rochester
Breitenbacher, Robert B.	Minneapolis		Cooley, Jack C.	Rochester
Brekke, Harvey J.	Minneapolis		Coombs, Carl H.	Cass Lake
Bretzke, Carl O.	Hutchinson		Cooper, Charles C.	St. Paul
Bridge, Allyn G.	Minneapolis		† Cooper, Maurice D.	Winnebago
Bridge, Ezra V.	Cannon Falls		Cooper, Robert R.	Minneapolis
Briggs, John F.	St. Paul		Cooper, Talbert	Rochester
* Brigham, Charles F., Sr.	St. Cloud		† Cope, Hershel B.	Minneapolis
Brigham, Charles F., Jr.	St. Cloud		Corbin, Kendall B.	Rochester
Brill, Alice K.	Minneapolis		Cornie, Albert D.	Minneapolis
Brink, Adlai A.	Baudette		Corrigan, Cyril J.	Minneapolis
Brink, Donald M.	Hutchinson		St. Paul	
Broadbent, James C.	Rochester		Cosgriff, James A., Sr.	Olivia
Broadie, Thomas E.	St. Paul		Cosgriff, James A., Jr.	Olivia
Brockway, Roger W.	Grand Rapids		Cottone, Francis John.	Rochester
Broders, C. W.	Rochester		Coulter, Harold E.	Maddela
Brodie, Walter D.	St. Paul		Countryman, Roger S.	St. Paul
Broker, Henry M.	St. Cloud		Coventry, Markham B.	Rochester
Brooker, Warren J.	Duluth		Coventry, William D.	Duluth
† Brooks, Charles N.	Minneapolis		Covey, Kenneth W.	Rochester
Brown, Alexander E.	Rochester		Cowan, Donald W.	Minneapolis
† Brown, Alexander H.	Pipestone		Craig, Clair C.	International Falls
Brown, Edgar D.	St. Petersburg, Fla.		Craig, David M.	St. Paul
† Brown, Hector M.	Walker		Craig, David M.	Minneapolis
Brown, Henry A.	Rochester		Craig, Elizabeth	Dayton, Ohio
Brown, Ian A.	Minneapolis		† Craig, Richard M.	Rochester
Brown, Joe R.	Rochester		Craig, Winchell McK.	Minneapolis
† Brown, John C.	Los Gatos, Calif.		Crammer, Richard R.	Minneapolis
Brown, Philip W.	Rochester		Cranston, Robert W.	Minneapolis
Brown, Roland G.	Rochester		Creevy, Charles D.	Minneapolis
Brown, William D.	Minneapolis		* Creighton, Ralph H.	Minneapolis
Bruhl, Heinz H.	Faribault		Critchfield, Lyman R.	St. Paul
Bruntsing, Louis A.	Rochester		Cronwell, Bernhard J.	Austin
Brusegard, James F.	Red Wing		Crowley, James H.	St. Paul
Bruwer, Andre J.	Rochester		Crudo, Vincent D.	St. Paul
			Crumbley, James J., Jr.	Tampa, Fla.

## **ALPHABETIC ROSTER**

onal Falls	Crump, James W.	St. Paul	DuBois, Julian F., Sr.	Sauk Centre	Erskine, Gordon M.	Grand Rapids
Minneapolis	Culligan, John M.	St. Paul	DuBois, Julian F., Jr.	Sauk Centre	Ertel, Edward Q.	Ellendale
Minneapolis	Culligan, Leo C.	Minneapolis	Duff, Edwin R.	Minneapolis	Esenstein, Sidney	Minneapolis
Rochester	Culligan, Leo S.	Rochester	Dummer, Donald J.	Minneapolis	Eshelby, E. C.	St. Paul
Minneapolis	Cull, Ormond S.	Rochester	Duncan, James W.	Moorhead	Esher, Robert A.	St. Charles, Ill.
Aurora	Calver, L. G.	St. Paul	Dungay, Neil S.	Northfield	Estes, J. Earle	Rochester
Duluth	Donald, Donald T.	Minneapolis	Dunlap, Earl H.	Minneapolis	Extrem, Ralph L.	Fergus Falls
Winona	Curtis, Rauen A.	LeCenter	Dunn, Jack, Jr.	Clovis, New Mexico	Eusterman, George B.	Fergus Falls
St. Paul	Cushing, Robert L.	Braainerd	Dunn, James N.	St. Paul	Eustermann, John J.	Rochester
Rochester	Cutts, George	Minneapolis	Dunn, Robert C.	St. Paul	Evans, Edward T.	Mankato
St. Paul	Dady, Elmer E.	Minneapolis	Dupont, Joseph A.	Excelsior	Evans, Harold W.	Minneapolis
St. Paul	Dahlin, Rolf.	Fairchild, Washington	Duryea, Marby	Minneapolis	Evans, Leslie	Rochester
Jackson	Daggett, Donald R.	Minneapolis	Duryea, Willis M.	Minneapolis	Evans, Robert D.	Sank Rapids
Rochester	Dahl, Elmer O.	Minneapolis	Duryea, Willis M., Jr.	Minneapolis	Everts, Arrah B.	Minneapolis
Rochester	Dahl, James C.	Minneapolis	Dushane, James W.	Rochester	Evensta, John B.	Rochester
Willmar	Dahl, John A.	Minneapolis	Dutton, C. E.	Minneapolis	Ewen, Edgar F.	Grand Rapids
Ely	Dahlin, David G.	Rochester	Dvorak, Benjamin A.	Minneapolis	Faber, John E.	Rochester
Rochester	Daignault, Oscar	Benson	Dwan, Paul F.	Minneapolis	Fabi, Mario Nestor.	Rochester
Crookston	Dale, Lester N.	Red Lake Falls	Dworsky, Samuel D.	Duluth	Fahr, George E.	Minneapolis
Duluth	Daly, David	Rochester	Dwyer, John J.	Rochester	Failor, Harlan J.	Litchfield
Rochester	Daniel, Donald H.	Minneapolis	Dyer, John Allen	Gaylord	Fallom, Virgil T.	Duluth
Duluth	Danielson, Karl A.	Litchfield	Dysterheft, Adolf F.		Falls, John L.	Red Wing
St. Cloud	Danielson, Lennox	Litchfield	Earl, George A.	St. Paul	Fansler, Walter A.	Minneapolis
Minneapolis	Danyluk, Michael	Minneapolis	Earl, John R.	St. Paul	Farkas, John V.	St. Paul
Duluth	Dautherty, Guy W.	Rochester	Eaton, Leades M.	Rochester	Farley, Frank G.	Hibbing
Wing Valley	David, Reuben	Minneapolis	Eberly, Tobe S.	Benson	Fasbender, Herman T.	Hastings
Minneapolis	Davis, Austin C.	Rochester	Eberlin, Edward A.	Glenwood	Faucett, Robert L.	Rochester
Minneapolis	Davis, Edward V.	St. Paul	Eckdale, John E.	Marshall	Faulconer, Albert, Jr.	Rochester
Minneapolis	Davis, George D.	Rochester	Eckman, Philip F.	Duluth	Fawcett, Arthur M.	Rochester
Minneapolis	Davis, Jay C.	Minneapolis	Eckman, Ralph J.	Duluth	Fawcett, Keith R.	Duluth
Minneapolis	Davis, Lloyd T.	Wadena	Edelmann, Robert B.	Rochester	Fedor, Robert D.	Litchfield
Minneapolis	Davis, Luther F.	Wadena	Edler, Walter P.	Minneapolis	Fee, John G.	St. Paul
Minneapolis	Davis, Raymond D.	Waseca	Edwards, Jesse E.	Rochester	Feehey, John M.	Minneapolis
Minneapolis	Davis, William I.	Mound	Edwards, Joseph W.	St. Paul	Feigal, David W.	Wayzata
Minneapolis	Dawson, James R.	St. Paul	Edwards, Lloyd G.	St. Paul	Feinberg, Milton	St. Paul
Minneapolis	Dawson, Lorin D.	Worthington	Edwards, Thomas J.	St. Paul	Feinberg, Philip	Minneapolis
Minneapolis	Dearing, William H.	Rochester	Egge, Sanford G.	Albert Lea	Feinstein, Julius Y.	Minneapolis
St. Paul	Decker, Barry	Rochester	Eginton, Charles T.	St. Paul	Felder, Davitt A.	St. Paul
Terrace	Decker, Charles H.	St. Paul	Ehrenberg, Claude J.	Minneapolis	Feldmann, Floyd M.	New York, N. Y.
St. Paul	Decker, David G.	Rochester	Ehrlach, S. Paul	Minneapolis	Felion, Arthur J.	St. Paul
Minneapolis	DeGeest, James H.	Goodhue	Eich, Matthew A.	Minneapolis	Fellows, Manley F.	Duluth
Minneapolis	DeKruif, Hendrik	Fergus Falls	Eichhorn, Edmund, P., Jr.	Minneapolis	Fenger, Ejvind P. K.	Oak Terrace
Minneapolis	Del Plaine, Carlos W.	Minneapolis	Eide, O. A.	Hancock	Ferguson, William C.	Walnut Grove
Minneapolis	Demo, Robert A.	Albert Lea	Eller, John	Duluth	Ferrand, Paula T.	Moose Lake
Minneapolis	Derouf, Benjamin I.	St. Paul	Eisenstadt, David H.	Minneapolis	Ferrall, Clarence R.	Grand Rapids
Minneapolis	Deters, Donald C.	St. Paul	Eisenstadt, William S.	Minneapolis	Ferris, Deward O.	Rochester
Minneapolis	DeJen, Edward D.	Bigfork	Eitel, George D.	Minneapolis	Fesenmaier, Otto B.	New Ulm
Minneapolis	Deweaux, Thomas J.	Wayzata	Eklblad, John W.	Duluth	Fesler, Harold H.	St. Paul
Minneapolis	Devine, Kenneth D.	Rochester	Eklund, Carl D.	Duluth	Fetzek, Albert D.	Great Falls, Mont.
Minneapolis	DeWeerd, James H.	Rochester	Ekstrand, LeRoy M.	Wabasha	Feuling, John C.	Duluth
Minneapolis	Dewese, Wilford J.	Bemidji	Elli, Earl W.	Minneapolis	Fidelman, Norman E.	Foley
Minneapolis	Dewey, Donald H.	Owatonna	Elias, Frank J.	Duluth	Field, Anthony H.	Farmington
Minneapolis	Dickinson, L. S.	Rochester	Elkins, Earl C.	Rochester	Field, Charles W.	Minneapolis
Minneapolis	Dickinson, Franklin H.	Proctor	Ellerton, Leonard M.	Albert Lea	Fifer, William R.	St. Paul
Minneapolis	Dickinson, Thomas H.	St. Paul	Ellinger, Albert J.	Willmar	Fifield, Malcolm M.	Duluth
Minneapolis	Diesbach, Eugene J., Jr.	Minneapolis	Elliot, Harold J.	Hayfield	Figli, Frederick A.	Rochester
Minneapolis	Diehl, Harold S.	Minneapolis	Ellis, Earl Wm.	Elgin	Fingerman, David L.	Minneapolis
Minneapolis	Dierker, Heinrich	Minneapolis	F. Henry	Rochester	Fink, Daniel L.	St. Paul
Minneapolis	Diesner, Ardell W.	Redwood Falls	Ellison, David E.	Minneapolis	Fink, Leo W.	Minneapolis
Minneapolis	Dodge, Henry W., Jr.	Rochester	Ellison, Eddie	Monticello	Finkelburg, William O.	Winona
Minneapolis	Doherty, Elmer M.	New Prague	Ellison, Frank B.	Long Lake	Fisch, Herbert M.	Austin
Minneapolis	Dokken, James H.	Windom	Elrod, Calvin R.	Glenwood	Fischer, John R.	Blooming Prairie
Minneapolis	Domian, Victor Wm.	Lakefield	Elsey, James R.	Rochester	Fischer, Marion McC.	Duluth
Minneapolis	Doms, Vernon A.	Elbow Lake	Elsner, Howard L.	So. St. Paul	Fisher, Robert F.	St. Paul
Minneapolis	Donaldson, Charles S.	St. Cloud	Ely, Orriman S.	Duluth	Fisher, Isadore I.	Minneapolis
Minneapolis	Donatelle, Edward P.	Minneapolis	Emmanuel, Karl Wm.	St. Paul	Fisketti, Henry	Duluth
Minneapolis	Donoghue, Francis E.	Rochester	Emerson, Edward C.	Osakis	Fitzgerald, Don F.	Wayzata
Minneapolis	Donovan, Daniel L.	Albert Lea	Emmett, John L.	Rochester	Fitzsimons, William E.	Braainerd
Minneapolis	Dille, Donald E.	Igloo, S. D.	Emond, Albert J.	Farmington	Flanigan, Harold F.	Minneapolis
Minneapolis	Dines, David E.	Rochester	Emond, Joseph S.	Farmington	Flanagan, Leonard G.	St. Paul
Minneapolis	Dixon, Claude F.	Rochester	Endress, Edward K.	St. Paul	Flancher, Leon H.	Austin
Minneapolis	Dobson, M. W.	Mankato	Engberg, Edward J.	Faribault	Flannery, Hubert F.	Crookston
Minneapolis	Dockerty, Malcolm B.	Rochester	Engel, Joseph P.	Minneapolis	Flatt, John R.	St. Paul
Minneapolis	Dodds, William Clark	Detroit Lakes	Engelhart, Peter C.	Minneapolis	Fleeson, William H.	Wabasha
Minneapolis	Dodge, Henry W., Jr.	Rochester	Englund, Elvin F.	Minneapolis	Fleming, Alloysius.	Minneapolis
Minneapolis	Doherty, Elmer M.	New Prague	Engstrand, Oscar J.	Minneapolis	Fleming, Dean S.	Madison, N. J.
Minneapolis	Dokken, James H.	Windom	Engstrom, Denton P.	Minneapolis	Fleming, Thomas N.	Hooks
Minneapolis	Domian, Victor Wm.	Lakefield	Engstrom, Robert	Mankato	Flesche, Bernard A.	St. Cloud
Minneapolis	Dongre, Richard I.	Sacred Heart	Enroth, Oscar E.	St. Paul	Fleisch, Bernard F.	Lake City
Minneapolis	Dornblaser, Harry B.	Minneapolis	Ensrud, Earl Richard.	Rochester	Fleisch, Richard R.	Minneapolis
Minneapolis	Dorsey, George C.	Minneapolis	Eppard, Raymond M.	Rochester	Flink, Edmund B.	Minneapolis
Minneapolis	Douglas, Kenneth W.	Sandstone	Epstein, John H.	Albert Lea	Finn, James B.	Redwood Falls
Minneapolis	Douglass, Bruce E.	Rochester	Erdal, Ove A.	Rochester	Finn, Thomas B.	Remer
Minneapolis	Dovenmuehle, Robert H.	Durham, N. C.	Erich, John B.	Rochester	Floersch, Adrian J.	Glencoe
Minneapolis	Downing, William C.	Crookston	Erickson, Alvin O.	Lone Prairie	Flem, Reynold P.	St. Paul
Minneapolis	Doxey, Gilbert L.	Minneapolis	Erickson, Clifford O.	Minneapolis	Flor, Frank S.	Columbus, Ga.
Minneapolis	Doxsey, George C.	Chisholm	Erickson, Donald J.	Halstad	Florine, Martin C.	Janesville
Minneapolis	Doyle, James R.	Rochester	Erickson, Eskil	Hibbing	Flynn, Bernard F.	Hibbing
Minneapolis	Doyle, Lawrence O.	Minneapolis	Erickson, George F.	Minneapolis	Flynn, L. L., Jr.	St. Paul
Minneapolis	Drake, Carl B.	St. Paul	Erickson, Laurence F.	Minneapolis	Fogarty, Charles W., Sr.	St. Paul
Minneapolis	Drake, Charles R.	Minneapolis	Erickson, Myron E.	Minneapolis	Fogarty, Charles W., Jr.	St. Paul
Minneapolis	Dredge, Homer P.	Sandstone	Erickson, Reuben F.	Minneapolis	Fogelberg, Emil J.	St. Paul
Minneapolis	Dredge, Thomas H.	St. Cloud	Erickson, Vernon D.	Grand Rapids	Foker, Leslie W.	Minneapolis
Minneapolis	Drexler, George W.	Blue Earth	Erickson, Reinhold M.	Wayzata	Foley, Frederic E. B.	St. Paul
Minneapolis	Drill, Herman E.	Hopkins	Erickson, Swan	Los Angeles, Calif.	Folken, Frank G.	Albert Lea
Minneapolis	Drips, Della G.	Oronoco	Ernest, George C. H.	St. Petersburg, Fla.		
Minneapolis	Dry, Thomas J.	Rochester	Ersfeld, Murray P.	St. Paul		
Minneapolis	Ernest, George C. H.	New Ulm				

## ALPHABETIC ROSTER

Folsom, Louis B.	Minneapolis	Giffin, Mary E.	Rochester	Haberman, Emil	Oaks
Ford, Burton C.	Marshall	Gifford, R. W., Jr.	Rochester	Haes, Julius E.	Mankato
Ford, William H.	Minneapolis	Gilbert, Maurice G.	Minneapolis	Hagedorn, Albert B.	Rochester
Forsythe, James R.	St. Paul	Gill, Theodore	Albert Lea	Hagen, John D.	Austin
Fortier, George M. A.	Little Falls	Gillespie, Delmar R.	St. Paul	Hagen, Kristofer	Minneapolis
Fortier, Rene G.	Mankato	Gillespie, Malcolm G.	Duluth	Hagen, Olaf J.	Moorhead
Foss, Edward L.	Rochester	Gilman, Lloyd C.	Willmar	Hagen, Paul S.	St. Paul
Foster, Orley W.	Minneapolis	Gilmore, Rowland	Crookston	Hagen, Wayne S.	Minneapolis
Foulk, William T., Jr.	Rochester	Gilsdorf, Donald A.	New York, N. Y.	Haggard, G. D.	Minneapolis
Fowler, Lucas Haynes.	Minneapolis	Gingold, Benjamin A.	Minneapolis	Haines, Samuel F.	Rochester
† Fox, Donald P.	Tanganyika, East Africa	Ginsberg, Robert L.	San Antonio, Texas	Hakanson, Erick Y.	St. Paul
Fox, James Rogers.	Minneapolis	Girvin, Richard B.	Minneapolis	Halbeck, John H.	Duluth
Fox, LeRoy J.	St. Paul	Gislason, Solvig T.	St. Peter	Halenbeck, Philip L.	St. Cloud
Franchere, Frederick Wm.	Lake Crystal	Gjerde, William P.	Lake City	Hall, Barnard	St. Paul
Francis, David W.	Morrisstown	Glaeber, Robert A.	Plainview	Hall, Harry B.	Minneapolis
Frane, Donald B.	Minneapolis	Gleason, Wallace A.	Minneapolis	Hall, Wendell H.	Minneapolis
Franklin, Gordon W.	Northome	Glew, William Bainbridge	Rochester	Hall, William E.	Maple Lake
Fredericks, George M.	Minneapolis	Glick, Dallas Donald	Rochester	Hallberg, Olav E.	Rochester
Frederickson, Alice C.	Wilmar	Gloeck, Bernard C. Jr.	Minneapolis	Hallenbeck, George A.	Rochester
Fredericks, Merriam G.	Duluth	Goblirsch, Andrew P.	Sleepy Eye	† Halliday, Phillip V.	Duluth
Freeman, Charles D., Jr.	St. Paul	Goehrs, Gilman H.	St. Cloud	Hallin, Roger P.	Worthington
Freeman, Craig	Minneapolis	Goehrs, Henry W.	St. Cloud	Halloran, Walter H.	Jackson
Freeman, Donald W.	St. Louis Park	Goehrs, Homer R.	Rochester	Halime, William B.	Wadena
Freeman, Gerald I.	St. Paul	Goetz, Frederick C.	Minneapolis	Halper, Bernard	Hibbing
Freeman, John P.	Glenville	Goldberg, Isadore M.	Minneapolis	Halpern, David J.	Brewster
Freiman, Louis L.	St. Paul	Goldish, Daniel R.	Duluth	Halpin, Joseph E.	Rush City
Freidman, Bayard T.	Hibbing	Goldish, Robert J.	Duluth	Halverson, Donald E.	Winnebago
French, Lyle A.	Minneapolis	Goldman, Theodore I.	Minneapolis	Halvorsen, Daniel K.	Owatonna
Frethem, Allen A.	Minneapolis	Goldner, Meyer Z.	Minneapolis	Halvorsen, James W.	Zumbrota
Frey, Richard J.	Rochester	Goldsmith, Joseph W.	St. Paul	Hamion, John S.	Fergus Falls
Friborg, Joseph	Minneapolis	Goldstein, Norman P.	Rochester	Hamel, Joseph I.	Minneapolis
Fricke, Robert E.	Minneapolis	Goltz, Edward V.	St. Paul	Hammer, Lawrence M.	Mankato
Fried, Louis A.	Minneapolis	Goltz, Robert W.	Minneapolis	Hammes, Ernest M., Sr.	St. Paul
Friedell, Aaron	Minneapolis	Good, C. Allen, Jr.	Rochester	Hammes, Ernest M., Jr.	St. Paul
Friedell, George	St. Louis Park	Good, Hoff D.	Minneapolis	† Haney, Claude L.	Duluth
Friedman, Harry S.	Minneapolis	Good, Roy H.	Glenwood	Hankerson, Robert G.	Minnesota Lake
* Friedman, Jack	Minneapolis	Goodchild, William R.	Minneapolis	Hannah, Hewitt B.	Minneapolis
Friend, Charles A.	Minneapolis	Goodman, Charles E.	Virginia	Hanson, Donald W.	St. Paul
Fritzsche, Albert	New Ulm	Gordon, Philip E.	Minneapolis	† Hanover, Ralph D.	International Falls
Fritzsche, Carl J.	New Ulm	Gordon, Sewell S.	St. Louis Park	Hansen, Cyrus O.	Minneapolis
Fritzsche, Theodore R.	New Ulm	Gowan, Lawrence R.	Duluth	Hansen, Erling W.	Minneapolis
Fritz, Wallace L.	St. Paul	Grace, Joseph B.	Rochester	Hansen, Olga S.	Minneapolis
Froats, Charles W.	St. Paul	Graham, Archibald W.	Chisholm	Hansen, Robert E.	Hibbing
* Frost, Edward H.	Willmar	Grahek, Jack P.	Ely	Hansen, Rollin M.	Minneapolis
Frost, John B.	Minneapolis	Granquist, Richard D.	Coleraine	Hansen, Theodore M.	Albert Lea
Frost, Russell H.	Oak Terrace	Grant, Hendrie W.	St. Paul	† Hanson, Adolph M.	Faribault
Frykman, Howard M.	Minneapolis	Grant, John C.	Sauk Centre	Hanson, Ernest O.	Cloquet
Frys, Russell N.	Minneapolis	Grant, Suzanne	Minneapolis	Hanson, Everett C.	New York Mills
† Furina, George R.	Mankato	Gratzek, Frank R. E.	Minneapolis	Hanson, Harlow J.	Minneapolis
Fuller, Alice H.	Minneapolis	Gratzek, Thomas	St. Paul	Hanson, Henry V.	Minneapolis
Fuller, Benjamin F.	St. Paul	Grau, R. K.	St. Paul	Hanson, John W.	Northfield
Fuller, Josiah	Duluth	Graves, Richard B.	Red Wing	Hanson, LeRoy W.	Pelican Rapids
Funk, Victor K.	Oak Terrace	Gray, Edward F.	White Bear Lake	Hanson, Lewis	Frost
Furlow, William L.	Faribault	Gray, Frank D.	Marshall	Hanson, Malcolm B.	Minneapolis
Furman, Lucie C.	Minneapolis	Gray, Howard K.	Rochester	Hanson, Mark C. L.	Minneapolis
† Furr, Leo O.	Long Beach, Calif.	Gray, Royal C.	Minneapolis	Hanson, Norbert O.	Rochester
Gaard, Richard C.	Minneapolis	Green, Paul A.	Rochester	Hanson, William A. H.	Minneapolis
Gaebe, Milton B.	Clarke City	Green, Robert A.	St. Louis Park	Happe, Lawrence J.	Minneapolis
Gaida, Joseph B.	St. Cloud	Greenberg, Albert J.	Minneapolis	Harada, Thomas T.	Lake Wilson
† Gallagher, Bernard J.	Waseca	Greene, Daniel E.	Thief River Falls	Harbaugh, John T.	St. Paul
Gallett, Lester E.	Minneapolis	Greenfield, Irving F.	Rochester	Hardy, William M.	Rochester
Galligan, John J.	St. Paul	Greenfield, William T.	Cokato	Hargraves, Malcolm M.	Rochester
† Galligan, Margaret M.	Minneapolis	Gridley, Esther M.	Philadelphia, Pa.	Harmon, Gaius E.	St. Paul
Gambill, Carl M.	Rochester	Gribble, Grant L.	Arlington	Harrington, Stuart W.	Rochester
Gambill, Earl E.	Rochester	Grimley, Andrew V.	Grand Rapids	Harrington, Vernon A., Jr.	Duluth
Gamble, Elbert J.	Brielyn	Grise, William B.	Bemidji	Harris, Carl N.	Hibbing
Gamm, Edgar R.	Triumph	Grimm, Burton P.	St. Paul	Harris, Leon D.	Minneapolis
Gammell, John H.	Minneapolis	Grimes, Marian	St. Peter	Harris, Lloyd E.	Rochester
Garamella, Joseph J.	Minneapolis	Grimell, Francis J.	Minneapolis	Harrison, Percy W.	Worthington
Garbrecht, Arthur Wm.	St. Paul	Grindlay, John H.	Rochester	Hart, William E.	Monticello
Gardner, Gawain B.	Rochester	Grinley, Andrew V.	Grand Rapids	Hartfiel, Herbert A.	Montevideo
Gardner, Jack K.	Ceylon	Grise, William B.	Austin	Hartfiel, William F.	St. Paul
Gardner, John U.	Rochester	Groch, Sigmund N.	Rochester	Hartjen, Marjorie	St. Paul
Gardner, Victor H., Sr.	Fairmont	Grohs, William H.	Duluth	* Hartley, Jason K.	Bemidji
Gardner, Walter P.	St. Paul	Gronvall, Paul R.	Minneapolis	Hartley, Everett C.	St. Paul
Garlock, Arthur V.	Bemidji	Groschupf, Theodore P.	Bemidji	Hartman, Evelyn E.	Minneapolis
Garlock, Dewitt H.	Highlands, Calif.	Grose, Frederick N.	Clarissa	Hartman, Howard R.	Rochester
Garrow, Douglas M.	St. Paul	Gross, John B.	Rochester	Hartnagel, G. F.	Red Wing
Garske, George L.	Minneapolis	Grotting, John K.	Minneapolis	Hartridge, Virginia B.	Rochester
Garten, Joseph L.	Minneapolis	Grundset, Ole J.	Minneapolis	Hartung, Elmer H.	Claremont
Garvey, James T.	Minneapolis	Guilbert, G. D.	Monroe	Hartwicht, Roger F.	Winona
Gastineau, Clifford F.	Rochester	Guilfoyle, Pierre J.	Delano	Hass, Frederick M.	Minneapolis
Gatchell, Frank G.	Rochester	Gullikson, Glenn, Jr.	Minneapolis	† Hassett, Roger G.	Mankato
Gaut, William D.	Rochester	Gully, Raymond J.	Minneapolis	Hastings, DeForest R.	Minneapolis
Gaviser, David	Minneapolis	Gunkaagon, Frederick G.	Minneapolis	Hastings, Donald W.	Minneapolis
Gee, Vernon R.	Rochester	Gushurst, Edward G.	Minneapolis	† Hatch, Walter E.	Duluth
Gehlen, Joseph N.	St. Paul	Gustason, Harold T.	Minneapolis	Hauge, Erling T.	Minneapolis
Geib, Marvin J.	Moorhead	Guy, Jack A.	New London	Hauge, Malvin I.	Clarkfield
Geiser, Peter M.	Alexandria			Haugen, John A.	Minneapolis
Geraci, Joseph E.	Rochester			Hauser, Donald C.	Minneapolis
Geurs, Benjamin R.	Mankato			Hauser, George W.	Minneapolis
Ghormley, Ralph K.	Rochester			Hauser, Victor P.	St. Paul
† Ghostley, Mary C.	Bemidji			Havel, Robert J.	Minneapolis
Gibbs, Edward C.	St. Paul			Haven, Walter K.	Minneapolis
Gibbs, Robert W.	Minneapolis			† Havens, John G. W.	Austin
Giebenhain, John N.	Minneapolis			Hawkinson, Raymond P.	Minneapolis
Giere, Joseph C.	Minneapolis			Hawley, George M. B. II.	Red Wing
Giere, Richard W.	Minneapolis			Hay, Lyle J.	Minneapolis
Giere, Silas W.	Benson			Hayes, Albert F.	St. Paul
* Giesen, Allan F.	Starbuck			Hayes, James M.	Minneapolis
† Giffin, Herbert Z.	Rochester			Hayes, Alvin B.	Rochester

## ALPHABETIC ROSTER

Hays, Albert T.	Minneapolis	Hoffert, Henry E.	Minneapolis	Jacobson, Ferdinand C.	Duluth
Head, Douglas P.	Minneapolis	Hoffman, Roy A.	Minneapolis	Jacobson, Loren J.	Minneapolis
Hebbel, Robert	Minneapolis	Hoffman, Walter L.	Minneapolis	Jacobson, Wyman E.	St. Louis Park
Hebeisen, Milton B.	Chaska	Hoganson, Donald E.	Bemidji	James, Ellery M.	St. Paul
Heck, Frank J.	Rochester	Hoidale, Andrew	Tracy	James, John W.	Mahomedien
Heck, William W.	St. Paul	Holcomb, Joel T.	Marine-on-St. Croix	Janecky, Allen G.	Baudette
Hedberg, Gustaf A.	Nopeming	Holcomb, O. Wm.	St. Paul	Janes, Joseph M.	Rochester
Hedemark, Homer H.	Ortonville	Holian, Darwin K.	Albert Lea	Janssen, Martin E.	St. Paul
Hedemark, Truman A.	Ortonville	Holland, C. R.	Rochester	Jarvis, Bruce W.	St. Paul
Hedenstrom, Frank G.	St. Paul	Hollands, William H.	Fisher	Jarvis, Charles W.	St. Paul
Hedenstrom, Paul H.	Cambridge	Hollenhorst, Robert W.	Rochester	Jarvis, Marilyn A.	St. Paul
Hedenstrom, Philip C.	Marshall	Hollinshed, W. H.	St. Paul	Jastrom, Rupert M.	Rochester
Hedin, Raymond F.	Red Wing	Holm, Donald F.	Benson	Jay, Alan R.	St. Paul
Hedlund, Charles J.	Minneapolis	Holman, Colin B.	Rochester	Jefferies, William L.	Minneapolis
Hedrick, William L.	Rochester	Holmberg, Conrad J.	Minneapolis	Jensen, Alvin M.	Minneapolis
Heegaard, William G.	Alexandria	Holmberg, L. J.	Canby	Jensen, Harry C.	Bronwntown
Hegge, Rolv S.	Austin	Holnen, Robert W.	St. Paul	Jensen, John A.	Minneapolis
Heiman, Wm. Conrad	Cook	Holmes, Alva E.	Rush City	Jensen, Marius	Crookston
Heiberg, Emmett A.	Fergus Falls	Holmstrom, Carle H.	Warren	Jensen, Nathan K. J.	Minneapolis
Heiberg, Olaf M.	Worthington	Holt, John E.	St. Paul	Jensen, Reynold A.	Minneapolis
Heilig, William R.	St. Paul	Holzapfel, Fred C.	Minneapolis	Jenson, Thorvold J.	Minneapolis
Heilman, Dorothy M. H.	San Diego, Calif.	Hom, Leong Y. W.	North Chicago, Ill.	Jenson, James E.	Stillwater
Heilmann, Fordyce R.	Rochester	Honath, Donald H.	Owatonna	Jerome, Elizabeth K. B.	Minneapolis
Heimark, John J.	Mankato	Hooper, Worth A.	Long Beach, Calif.	Jeromius, Henry J.	Duluth
Heimark, Julius J.	Fairmont	Hoover, Norman	Virginia	Jesion, Joseph W.	Pine River
Heinz, Ivy B.	Shakopee	Hopkins, G. Wendell	St. Paul	Jessico, Charles M.	Duluth
Heinz, Lawrence H.	Shakopee	Horns, Howard L.	Minneapolis	Jeub, Robert P.	Minneapolis
Heinzerling, Carl R.	Chaska	Horns, Richard C.	Minneapolis	Joffe, Harold P.	Virginia
Heise, Carl v.R.	Winona	Horton, Bayard T.	Rochester	Johanson, Waldemar G.	St. Paul
Heise, Paul v.R.	Winona	Hottinger, Raymond C.	Janesville	Johanson, Henry A., Jr.	Edina
Heiland, John W.	Spring Grove	Hougland, Arvid J.	Lake Park	Johanson, Adelaide McF.	Rochester
Heller, Edgar E.	Mankato	Houkom, Bjarne	Minneapolis	Johnson, Aldridge F.	Isle
Helmholz, Henry F.	Rochester	Houkom, Samuel S.	Duluth	Johnson, Angelo G.	Minneapolis
Hebden, Howard K.	Pelican Rapids	Houle, Rollin J.	New Brighton	Johnson, Arthur B.	Minneapolis
Heitwig, Karl L., Jr.	Kerkhoven	House, Zachariah E.	Burbank, Calif.	Johnson, August E.	Minneapolis
Hempstead, Bert E.	Minneapolis	Houts, Joseph C.	Dassel	Johnson, Carl E.	St. Paul
Hench, Philip S.	Rochester	Hovde, Rolf	Winthrop	Johnson, Carl Eric	Rochester
Henderson, Arthur J. G., No.	St. Paul	Hovland, Melvin L.	Minneapolis	Johnson, Carolyn A.	St. Paul
Henderson, Edward D.	Rochester	Howard, Marshall I.	Mankato	Johnson, C. Percy	Tyler
Henderson, John W.	Rochester	Howard, Merrill A.	St. Paul	Johnson, Douglas L.	St. Paul
Henderson, Lowell L.	Rochester	Howard, Robert B.	Minneapolis	Johnson, Einer W., Sr.	Bemidji
Henderson, Robert Earl.	Rochester	Howard, Solomon E.	Minneapolis	Johnson, Einer W., Jr.	Rochester
Hendrickson, John F.	Minneapolis	Howard, Willard S.	St. Paul	Johnson, Emil W.	Duluth
Hengster, William H.	St. Paul	Howe, Newell W.	St. Paul	Johnson, Frank E.	Minneapolis
Henrikson, Earl C.	Minneapolis	Howell, Carter W.	Minneapolis	Johnson, Harry A.	Minneapolis
Henry, Clarence J.	Milaca	Howell, Lewellyn P.	Rochester	Johnson, Herbert W.	St. Paul
Henry, Clifford E.	Kirksville, Mo.	Howell, Milton M.	Glencoe	Johnson, James A.	Minneapolis
Henry, J. E.	Milaca	Hoyer, Ludolf J.	Windom	Johnson, John W.	Minneapolis
Henry, Kenneth G.	Owatonna	Hruza, William J.	Madelia	Johnson, Julius	Minneapolis
Henry, Martin R.	St. Peter	Hubin, Edwin G.	Sandstone	Johnson, Karl E.	Duluth
Hensel, Charles N.	St. Paul	Hudec, Elwyn R.	Echo	Johnson, Malcolm R.	Minneapolis
Hepper, Norman G.	Rochester	Hudson, George E.	Minneapolis	Johnson, Marvin W.	Dassel
Herbert, Edna E.	Rochester	Hueckens, Edgar J.	Minneapolis	Johnson, Morris B.	St. Paul
Herbert, Willis L.	Minneapolis	Huffington, Herbert L.	Lutsen	Johnson, Norman P.	Minneapolis
Herman, Samuel M.	St. Paul	Huffington, Herb L., Jr.	Waterville	Johnson, Norton T.	Minneapolis
Hermann, Harold W.	Minneapolis	Hughes, Bernard J.	Brainerd	Johnson, Olga H.	Moorhead
Hermannson, Peter E.	Hendricks	Hughes, Sidney O.	Winona	Johnson, Orville H.	Omaha, Neb.
Heron, Roy C.	St. Paul	Hullsieck, Harold E.	St. Paul	Johnson, R. J.	St. Paul
Herrmann, Edgar T.	Austin	Hulteng, Donald B.	Fort Snelling	Johnson, Ralph B.	Lanesboro
Hertel, Garfield E.	Austin	Hultkrans, Rudolph E.	Minneapolis	Johnson, Reinald G.	Minneapolis
Hertz, Myron J.	St. Paul	Humphrey, E. W., Sr.	Moorehead	Johnson, Reuben A.	Minneapolis
Hesla, Inman A.	Austin	Humphrey, Wade R.	Stillwater	Johnson, Richard S.	Minneapolis
Hewitt, Edith S.	Rochester	Hunt, Arthur B.	Rochester	Johnson, Robert E.	Minneapolis
Hewitt, Richard M.	Rochester	Hunt, Roscoe C.	Fairmont	Johnson, Robert H.	Chicago City
Heyerdahl, Oscar C.	Rochester	Hunt, William	Fergus Falls	Johnson, Roger S.	Wayzata
Higgins, John A.	Rochester	Hunter, James S., Jr.	Rochester	Johnson, Ronald G.	Minneapolis
Higgins, John H.	Minneapolis	Hunter, Murray H.	Farmington	Johnson, Vilhelm M.	Dawson
Higgs, Walter W.	Park Rapids	Hunter, Samuel W.	St. Paul	Johnson, William E.	Morgan
Hilding, Anderson C.	Duluth	Hurd, Annah	Minneapolis	Johnson, Youbert T.	Minneapolis
Hilger, Andrew Wm.	St. Paul	Hurwitz, Milton N.	St. Paul	Johnsrud, Luverne W.	Hibbing
Hilger, Jerome A.	St. Paul	Husted, Edward G.	St. Paul	Johnston, Henry W.	Virginia
Hilger, Laurence D.	St. Paul	Hutchinson, Dorothy W.	Oak Terrace	Johnston, Leonard F.	Winona
Hilgermann, George O.	Minneapolis	Hutchinson, Henry	Moose Lake	Johnston, Rufus O.	Fort Lauderdale, Fla.
Hilkner, Marcus D.	St. Paul	Huxley, Frederick R.	Faribault	Johnstone, William W.	Ah-gwah-ching
Hill, Earl	Minneapolis	Hymes, Charles	Minneapolis	Jolin, Francis M.	Bovey
Hill, Elmer M.	Minneapolis	Hynes, John E.	Minneapolis	Jones, Alva W.	Red Wings
Hill, Frederick E.	Riverside, Calif.	Ide, Arthur W., Sr.	St. Paul	Jones, David G.	Minneapolis
Hill, John P.	Virginia	Ide, Arthur W., Jr.	Minneapolis	Jones, E. Mendelsohn	St. Paul
Hill, John R.	Rochester	Idstrom, L. G.	Minneapolis	Jones, Herbert W., Jr.	Minneapolis
Hill, Richard Woolsey.	Rochester	Ikeda, Kano	St. Paul	Jones, Richard H.	Minneapolis
Hills, Samuel J.	Minneapolis	Indeck, Walter	Minneapolis	Jones, Richard N.	St. Cloud
Hinckley, Robert G.	Minneapolis	Ingham, Edgar G., Jr.	Minneapolis	Jones, Robcliff U., Jr.	Fairfield, Conn.
Hinderaker, Harris P.	Bird Island	Ingrerson, Carl A.	St. Paul	Jordan, Kathleen Smith	Granite Falls
Hines, Edgar A., Jr.	Rochester	Inglis, William	Redwood Falls	Jordan, Lewis S.	Granite Falls
Hiniker, Louis P.	St. Paul	Ireland, Gerald W.	Nashwauk	Josewski, Alexander	Minneapolis
Hinz, Walter E.	Duluth	Irvine, Harry G.	Minneapolis	Josewski, Raymond J.	Stillwater
Hirschboeck, Frank J.	Duluth	Iverson, Rolf M.	Minneapolis	Joyce, George L.	Rochester
Hirsh, Stanton A.	Crookston	Ivins, John C.	Rochester	Judd, Allen S.	Minneapolis
Hirschfeld, Frank R.	Minneapolis	Hitchcock, Claude R.	Minneapolis	Judd, Edward S., Jr.	Rochester
Hochfizler, John J.	Minneapolis	St. Paul	Willmar	Judd, Walter H.	Washington, D. C.
Hodapp, Robert V.	Willmar	Hodding, Corrin H.	Minneapolis	Juergens, Herman M.	Belle Plaine
Hodgson, Jane E.	Rochester	Hodgson, John R.	Rochester	Juergens, John L.	Rochester
Hodgson, John R.	St. Paul	Hoeper, Philip G.	Minneapolis	Juergens, Manley F.	Stillwater
Hoch, David	Holdingford	Hoff, Herbert O.	Duluth	Juers, Edward H.	Red Wings
Hofbauers, Frederick W.	Mankato	Hofbauers, Frederick W.	Minneapolis	Julian, Richard O.	Los Angeles, Calif.
Holme, John C.	Minneapolis	Holmes, John C.	Minneapolis	Juntunens, Roy R.	Duluth
Holmes, John C.	Minneapolis	Holmes, John C.	Minneapolis	Jurdy, Mitchell J.	Minneapolis
Holmes, John C.	Minneapolis	Holmes, John C.	Minneapolis	Just, Herman J.	Huntington

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Kaasa, Lawrence J.	Albert Lea	Koller, Hermann M.	Minneapolis	*Leavitt, H. H.	Minneapolis
Kadesky, Harold B.	Minneapolis	Koller, Louis R.	Minneapolis	*Lebowe, Joseph A.	Minneapolis
Kaiser, Milton L.	New Ulm	Koller, Robert L.	Minneapolis	Leck, Paul C.	Austin
Kalin, Oscar T.	Minneapolis	Kooda, Jennings C.	Morris	Ledd, Eugene T.	Rochester
Kallestad, Leonard L.	Wayzata	Koop, Herman E.	Cold Spring	Lee, Gordon E.	Glenwood
Kanman, Gordon R.	St. Paul	Korchik, John P.	Minneapolis	Lee, Henry M.	Cambridge
Kanne, Earl R.	Brainerd	Korda, Henry A.	Pelican Rapids	Lee, Hubert W.	Brainerd
Kantar, Bruce L.	Minneapolis	Kosiak, John, Jr.	Minneapolis	Lee, Norman J.	Tracy
Kaplan, David H.	St. Paul	Koskela, Lauri E.	Keewatin	Leek, Joseph H.	Duluth
Kaplan, Harold A.	Minneapolis	Kostick, William R.	Fertile	Leemhuis, Andrew J.	Minneapolis
Kaplan, John J.	Minneapolis	Kotchevar, Frank R.	Eleventh	Leibold, Herbert H.	Parkers Prairie
Kapsner, Alfred T.	Princeton	Kottke, Frederic J.	Minneapolis	Leick, Richard M.	St. Paul
Karges, L. E.	Grand Rapids	Kotval, Russell J.	Pipestone	Leiferman, Robert J.	Minneapolis
Karleen, Bernard N.	Jackson	Koucky, Rudolph W.	Minneapolis	Leitch, Archibald	St. Paul
Karleen, Conrad I.	Minneapolis	Kovack, Freeman D.	Minneapolis	Leland, Harold R.	Minneapolis
Karlen, Markle	Minneapolis	Koza, Donald W.	St. Paul	Lenander, Melvin E.	St. Peter
Karn, Jacob F.	Ortonville	Kozberg, Oscar	Moose Lake	Lenard, Albert J.	Browerville
Karon, Irvin M.	St. Paul	Kraemer, George N.	Fairmont	Lende, Norman	Faribault
Kasper, Eugene M.	St. Paul	Kraft, Walter E.	Minneapolis	Lenz, Joseph R.	Morton
Kath, Reinhard H.	Arlington	Krause, C. W.	Fairmont	Lenz, Otto A.	Minneapolis
Katz, Louis J.	Long Beach, Calif.	Kremens, Arnold J.	Minneapolis	Leonard, Lawrence J.	Minneapolis
Kaufman, Edward J.	Appleton	Kreuzer, Titus C.	Marshall	Leonard, Samuel	Minneapolis
Kaufman, Herschel J.	Minneapolis	Krezowski, Thomas K.	St. Paul	Leopard, Brand A.	Brownsville, Texas
Kaufman, Walter B.	Mankato	Krieser, Albert E.	Minneapolis	Lepak, Francis J.	Duluth
Kaufman, William C.	Appleton	Kroboth, Frank J., Jr.	Rochester	Lepak, John A.	St. Paul
Kearney, Rochfort W.	Mankato	Krout, Robert M.	Rochester	Leppo, N. Erkki A.	Duluth
Kearns, Thomas F.	Rochester	Krueger, Victor R.	Noeppening	Lerche, William	Cable, Wis.
Keating, F. Raymond	Rochester	Kruger, Elmer L., Jr.	Hibbing	Lerner, A. Ross.	Minneapolis
Keefe, Roland E.	St. Paul	Krusen, Frank H.	Rochester	Lescoe, Richard J.	Ellington AFB, Texas
Keil, Marcus A.	Albert Lea	Kruzik, S. J.	Sleepy Eye	Lester, Malcolm J.	Truman
Keith, Haddow M.	Rochester	Krystosek, Lee A.	Madison, Wis.	Letson, Robert D.	Glenwood
Keith, Norman M.	Rochester	Kucera, Frank J.	Hopkins	Leven, N. Logan	St. Paul
Keith, Paul J.	Milaca	Kucera, Louis B.	Colo. Springs, Colo.	Leverenz, Carlton W.	St. Paul
Keithahn, Elmer E.	Sleepy Eye	Kucera, Stanley T.	Northfield	Levin, Bert G.	St. Paul
Kelby, Gjert M.	Minneapolis	Kucera, William J., Sr.	Minneapolis	Levitt, George X.	St. Paul
Kelley, Walter M.	Duluth	Kucera, William J., Jr.	Minneapolis	Lewis, Arthur J.	Henningsen
Kelly, Charles F.	Minneapolis	Kugler, Alex A.	St. Paul	Lewis, Charles W.	Henningsen
Kelly, James H.	St. Paul	Kuhmann, Lawrence B.	Melrose	Lewis, Claude B.	St. Cloud
Kelly, John F.	Cold Spring	Kuhn, Arthur J.	Rochester	Lewis, F. John	Minneapolis
Kelly, John P.	Minneapolis	Kulstad, Oscar S.	Dodge Center	Lewis, Joyce S., Jr.	Minneapolis
Kelly, John V.	St. Paul	Kulzer, Norbert J.	Hastings	Lexa, Frank J.	Lonsdale
Kelly, Robert T.	Nashwauk	Kurtin, Joseph J.	New York, N. Y.	Liberth, John N.	St. Cloud
Kelsey, Carleton G.	St. Paul	Kuske, Albert W.	St. Paul	Lick, Charles L.	St. Paul
Kelsey, Chauncey M.	St. Paul	Kuske, Arthur L.	New Ulm	Lick, Louis C.	St. Paul
Kemp, Alphonse F.	Mankato	Kuske, Bradley W.	St. Paul	Lick, William J., Jr.	St. Paul
Kemper, James W.	Rochester	Kuske, Douglas R.	St. Paul	Liedloff, Adolph G.	Mankato
Kenefick, Emmett V.	St. Paul	Kuske, Clarence V.	Minneapolis	Lien, Richard J.	St. Paul
Kennedy, Claude C.	Minneapolis	Kvale, Walter F.	Rochester	Lienke, Roger I.	Minneapolis
Kennedy, George L.	Faribault	Kvitrud, Gilbert	St. Paul	Liffreg, William W.	Red Wing
Kennedy, Jane F.	Minneapolis			Lillebourn, Edgar L.	Hastings
Kennedy, Roger L.	Rochester			Lillehei, C. Walton	Minneapolis
Kenyon, Thomas J.	St. Paul			Lillehei, Elmer J.	Robbinsdale
Kerkhof, Arthur G.	Minneapolis			Lillie, Harold I.	Rochester
Kernahan, James W.	Rochester			Lillie, John C.	Rochester
Kesting, Herman	St. Paul			Lima, Ludvig R.	Montevideo
Keverna, Jay L.	Henning			Limbeck, Donald A.	Le Sueur
Keyes, John D.	Winona			Lindahl, Merlin J.	Sherburne
Keyes, Robert W.	Pipestone			Lindberg, Alfred L.	Weahon
Kiesler, Frank, Jr.	Minneapolis			Lindberg, Arthur N.	Minneapolis
Kildebride, Edwin A.	Worthington			Lindberg, Arvid C.	Minneapolis
Kilby, Ralph Allen	Rochester			Lindberg, Vernon L.	Minneapolis
Kimmel, George C.	Red Wing			Lindberg, Winston R.	Minneapolis
King, Edgar A.	Minneapolis			Lindblom, Alton E.	North Mankato
King, Frances W.	Oak Terrace			Lindblom, Maurice L.	Minneapolis
King, George L.	Hudson, Wis.			Linde, Herman	Cyrus
Kinkade, Byron R.	Ada			Lindell, Robert	St. Paul
Kinports, Edward B.	International Falls			Lindeman, Raymond J.	Payneville
Kinsella, Thomas J.	Minneapolis			Lindemann, Charles E.	Minneapolis
Kiolbasa, Edward B.	Stillwater			Lindgren, Russell C.	Minneapolis
Kippen, Neil	Breckenridge			Lindner, Janus C.	Minneapolis
Kirby, Thomas J., Jr.	Rochester			Lindquist, Richard H.	Minneapolis
Kirklin, B. R.	Rochester			Linner, Gunnar	Minneapolis
Kirklin, John W.	Rochester			Linner, Henry P.	Minneapolis
Kitzberger, Peter J.	New Ulm			Linner, John H.	Minneapolis
Klass, Donald W.	San Antonio, Texas			Linner, Paul W.	Minneapolis
Klefstad, Lloyd H.	Greenbush			Lippman, Hyman S.	St. Paul
Klein, Harry	Duluth			Lippman, Elmer W.	Hutchinson
*Klein, Henry N.	St. Paul			Lippman, Emanuel S.	Minneapolis
Klein, William A.	Duluth			Lipschultz, Oscar	Minneapolis
Klima, William W.	Stewart			Lipscomb, Paul R.	Rochester
Knapp, Frank N.	Duluth			Litchfield, John T.	Minneapolis
Knapp, Miland E.	Minneapolis			Litton, Edward M.	Rochester
Knight, Edwin G.	Swanville			Litman, Abraham B.	Minneapolis
Knight, James Harry.	Rochester			Litman, Samuel N.	Duluth
Knight, Ralph T.	Minneapolis			Litzow, Thaddeus	Rochester
Knight, Ray R.	Minneapolis			Lober, Paul H.	Minneapolis
Knoche, Harvey A.	Morgan			Loes, Louis A.	St. Cloud
*noedler, John P.	Duluth			Lofgren, Karl A.	Rochester
Knudsen, Helen L.	Minneapolis			Lofness, Stanley V.	St. Paul
Knutson, Gerhard E.	St. Paul			Lofstrom, Dennis E.	Pine River
Knutson, Lewis A.	Spring Grove			*Logan, Archibald H.	Rochester
Knutson, Robert C.	St. Paul			Logan, George B.	Rochester
Kodres, Nina	St. Paul			*Logefield, Randolph C.	Minneapolis
Koelsche, Giles A.	Rochester			Lohmann, John G.	Pipestone
Koenecke, F. H.	Lakefield			Loken, Selmer M.	St. Paul
Koenig, Robert P.	Geneva, N. Y.			Loken, Theodore	Ada
Koenigsberger, Charles	Mankato			Lommen, Peter A.	Austin
Koepcke, Gerald M.	Minneapolis			Longfellow, Helen W.	Brainerd
Kohlby, Carl O.	Duluth			Loomis, Earl A.	Minneapolis
Kohler, Delphin W.	Tacoma, Wash.				
Kolars, James J.	Faribault				

## ALPHABETIC ROSTER

Loomis, George L.	Winona	McNeill, J. A.	St. Paul	Metz, Donald D.	Buffalo Lake
Lorenzen, Ernest S.	Detroit Lakes	McNutt, John R.	Duluth	Meyer, Alvin J.	Minneapolis
Lorton, William L.	Rochester	McPheeters, Herman O.	Minneapolis	Meyer, Anthony A.	Melrose
Lott, Frederick H.	Minneapolis	McQuarrie, Irvin	Minneapolis	Meyer, Ette L.	Minneapolis
Louisell, Charles T.	Fairmont	McSweeny, Austin J.	Danville, Ill.	Meyer, Frederick C.	Kenyon
Love, Frederick A.	Carlos	MacCarty, Collin S.	Rochester	Meyer, Paul F.	Faribault
Love, J. Grafton.	Rochester	MacCarty, William C.	Rochester	Meyer, Robert J.	Minneapolis
Lovett, Beatrice R.	Oak Terrace	MacDonald, Daniel A.	Minneapolis	Meyer, Robert P.	Faribault
Lowe, Earl R.	So. St. Paul	MacDonald, John W.	Minneapolis	Meyerding, Edward A.	St. Paul
Lowe, Thomas A.	So. St. Paul	MacDonald, Roger A.	Littlefork	Meyerding, Henry Wm.	Rochester
Lowry, Elizabeth C.	Minneapolis	MacKinnon, Donald C.	Minneapolis	Michael, Joseph C.	Minneapolis
Lowry, Paul.	Minneapolis	MacLean, Alexander R.	Rochester	Michel, Henry H.	Willmar
Lowry, Thomas.	Minneapolis	MacRae, Gordon C.	Duluth	Michels, Roger P.	Minneapolis
Luck, Hilda.	Mankato	Mach, Frank B.	Minneapolis	Michelson, Henry E.	Minneapolis
Luckenbach, Carl J.	St. Cloud	Mach, Ralph F.	Pine City	Michienzi, Leonard J.	St. Paul
Lueck, Wallace W.	Minneapolis	Macklin, William E., Jr.	Willmar	Mickelson, Emma F.	Minneapolis
Lufkin, Nathaniel H.	Minneapolis	Mackoff, Sam M.	Phoenix, Ariz.	Mickelson, John C.	Durham, N. C.
Lukk, Olaf.	Montgomery	Madalin, Herbert E.	Rochester	Midboe, Gilbert T.	St. Paul
Lund, Carl J. T.	Fergus Falls	Madland, Robert S.	St. Paul	Midthune, A. S.	Lake Park
Lund, George W.	Minneapolis	Maeder, Edward C.	Minneapolis	Miettunen, John B.	Chisholm
Lund, Werner J.	Staples	Magath, Thomas B.	Rochester	Milhaupt, E. N.	St. Cloud
Lundberg, Ruth I.	Minneapolis	Magness, John L.	Rochester	Miller, Albert G.	St. Paul
Lundblad, Robert M.	Minneapolis	Magney, Fredolph H.	Duluth	Miller, Arden L.	Minneapolis
Lundblad, Roy A.	Minneapolis	Magnuson, Allen E.	Wheaton	Miller, Harold E.	Minneapolis
Lundblad, Stanley W.	Minneapolis	Magnuson, Raymond C.	Cambridge	Miller, Herman.	Reading
Lundeberg, Karl R.	Minneapolis	Magraw, Richard M.	Minneapolis	Miller, Hugo E.	Minneapolis
Lundell, Carl L.	Granite Falls	Mahle, Donald G.	Plainview	Miller, James R. Scott.	Rochester
Lundholm, Arthur M.	St. Paul	Mahowald, Aloys.	Fergus Falls	Miller, John C.	Minneapolis
Lundquist, Curt W.	Owatonna	Maitland, Edwin T.	Jackson	Miller, Roland D.	Rochester
Lundquist, Virgil J. P.	Minneapolis	Maland, Clarence O.	Minneapolis	Miller, Ross H.	Rochester
Lundsten, Leslie C.	Bemidji	Malerich, J. Anthony.	St. Paul	Miller, Victor L.	Mankato
Lundsten, Lloyd R.	Rochester	Malerich, J. Anthony, Jr.	St. Paul	Miller, William Anthony New York Mills	New York Mills
Lundy, John S.	Rochester	Malmstrom, John A.	Virginia	Miller, William P.	Montevideo
Lynch, Francis W.	St. Paul	Mandel, Sheldon A.	Minneapolis	Miller, William T.	Minneapolis
Lynch, Matthew J.	Minneapolis	Manger, William M.	Rochester	Miller, Winston R.	Red Wing
Lynn, Thomas E.	Rochester	Mankey, James C.	Minneapolis	Miller, Z. R.	St. Paul
Lyon, James H.	Minneapolis	Mankin, Harold T.	Rochester	Millet, D. Keith.	Minneapolis
Lyon, Michael W.	Minneapolis	Mann, George A.	Minneapolis	Millikan, Clark H.	Rochester
Lynne, Henry.	Minneapolis	Manson, Frank M.	Worthington	Mills, John L.	Winnebago
Lynne, Myron.	Minneapolis	Marking, George H.	Minneapolis	Mills, Stephen D.	Rochester
Lysy, Anatol.	Minneapolis	Marks, Roger W.	St. Paul	Milnar, Frank J.	St. Paul
Lyzenza, Anton G.	Minneapolis	Marrone, Patrick H.	Duluth	Milton, John S.	Minneapolis
McBean, J. B.	Rochester	Martin, Albert C.	Luverne	Minge, Raymond K.	Worthington
McCabe, James S.	St. Paul	Martin, Dwight L.	St. Paul	Minsky, Armen A.	Minneapolis
McCaffrey, F. John	Minneapolis	Martin, Frank E.	Minneapolis	Mintz, Charles M.	St. Paul
McCain, Donovan L.	St. Paul	Martin, George B.	Thiel River Falls	Mischbach, William D. Sherman Oaks, Cal.	
McCann, Eugene J.	Minneapolis	Martin, George R.	Minneapolis	Mishek, Charles J.	St. Paul
McCannel, Malcolm A.	Minneapolis	Martin, Gordon M.	Rochester	Mitby, Irving L.	Minneapolis
McCarter, Francis M.	Stillwater	Martin, Thomas Philip.	Arlington	Mitchell, Benton D.	Minneapolis
McCarthy, Austin M.	Stillwater	Martin, Webster C.	Duluth	Mitchell, Edwards C.	Minneapolis
McCarthy, Donald.	St. Paul	Martin, William B.	Duluth	Mitchell, Mancel T.	Minneapolis
McCarthy, Joseph J.	St. Paul	Martin, William J.	Rochester	Mixer, Harry W.	Minneapolis
McCartney, James S.	Minneapolis	Martineau, Joseph L.	St. Paul	Moberg, Clarence W.	Detroit Lakes
McCarty, Paul D.	Ely	Martinson, Carl J.	Wayzata	Moberg, Thomas D.	Tacoma, Wash.
McClanahan, James H.	White Bear Lake	Martinson, Elmer J.	Wayzata	Moe, John H.	Minneapolis
McClanahan, T. S.	White Bear Lake	Mason, Duncan M.	Rochester	Moe, Thomas.	Moose Lake
McClellan, Robert J.	St. Paul	Mason, James C.	Rochester	Moehn, John T.	Minneapolis
McCloud, Charles N., Jr.	St. Paul	Mason, James K.	Rochester	Moehring, Henry G.	Duluth
McConahey, William M., Jr.	Rochester	Mast, Frederic L.	Chisholm	Moen, Johannes K.	Minneapolis
McCormick, Donald P.	Minneapolis	Mateo, Guillermo.	St. Paul	Moersch, Frederick P.	Rochester
McCoy, Mary K.	Duluth	Mathieson, Don R.	Rochester	Moersch, Herman J.	Rochester
McDaniel, Oriana.	Minneapolis	Matthews, James H.	Minneapolis	Moertel, Charles G.	Rochester
McDonald, Archibald L.	Duluth	Matthews, Louis B., Jr.	Rochester	Moga, John A.	St. Paul
McDonald, John R.	Rochester	Mattill, Peter M.	Oak Terrace	Molander, Herbert A.	St. Paul
McDonald, Owen G.	Duluth	Mattison, Percy A.	Winona	Molenhaar, Robert E.	Cannon Falls
McDonald, William J.	Crookston	Mattson, Albert D.	St. James	Mollers, Theodore P.	Soudan
McDowell, John F.	St. Cloud	Mattson, Hamlin A. N.	Minneapolis	Monahan, Elizabeth S.	Minneapolis
McEnaney, Clifford T.	Owatonna	Maudner, John B.	Minneapolis	Monahan, Robert H.	St. Paul
McEwan, Alexander.	St. Paul	Maus, Philip.	New Orleans, La.	Monroe, Paul B.	Cloquet
McFarland, Arthur H.	Minneapolis	Maxeiner, Stanley R., Sr.	Minneapolis	Monserud, Nels O.	Minneapolis
McGandy, Robert F.	Minneapolis	Maxeiner, Stanley R., Jr.	Minneapolis	Monson, Einer M.	Canby
McGeary, George E.	Minneapolis	Mayne, John Gregory.	Rochester	Monson, Leonard J.	Rochester
McGroarty, Brian J.	St. Paul	Mayo, Roy M.	Nopeming	Montgomery, Hamilton.	Rochester
McGroarty, John J.	Easton	Mazzitello, William F.	St. Paul	Mooney, Robert P.	St. Paul
McHaffie, Orval L.	Duluth	Mead, Charles H.	Duluth	Moore, Irvin H.	Minneapolis
McHardy, Bryson R.	Chicago, Ill.	Meade, John R.	St. Paul	Moorhead, Marie.	Minneapolis
McIlhany, Mary Lou.	Wheeler, Texas	Mears, Curtis J.	St. Paul	Moos, Daniel J.	Minneapolis
McInerney, Maurice W.	Minneapolis	Mears, Robert F.	Northfield	Moquin, Marie A.	St. Paul
McIntire, Homer M.	Waseca	Medelman, John P.	St. Paul	Morehead, Dewey E.	Owatonna
McIntyre, John A.	Owatonna	Meinert, Albert E.	Winona	Moren, J. Adelaide.	White Bear Lake
McKaig, Alan M.	Red Lake Falls	Meinert, John K.	Willmar	Morgan, Edward R.	Rochester
McKaig, Carle B.	Pine Island	Melancon, Joseph F.	St. Paul	Morgan, Hugh O.	Anoka
McKay, John W.	Rochester	Melby, Benedict.	Bloomington Prairie	Moriarty, Berenice.	St. Paul
McKav, Walter E.	Altadena, Calif.	Meller, Maurice.	Brainerd	Moriarty, Cecile R.	St. Paul
McKelvey, John L.	Minneapolis	Meller, Robert L.	Minneapolis	Mork, A. Harold.	Anoka
McKenna, Elizabeth M.	Austin	Menzel, George R.	Lyle	Mork, Frank E.	Anoka
McKenna, Jay K.	Austin	Menefee, Edward C.	Albert Lea	Morlock, Carl G.	Rochester
McKenna, John J.	Virginia	Menold, William F.	St. Paul	Morrison, Charlotte J.	Minneapolis
McKenna, Maurice J.	Grand Rapids	Mensheha, Nicholas.	Forest Lake	Morrow, George W., Jr.	Rochester
McKenzie, Charles H.	Minneapolis	Mercil, William F.	Crookston	Morse, Morton P.	LeRoy
McKenzie, Eva Elaine.	St. Paul	Merkert, Charles E.	Minneapolis	Morsman, L. William.	Hibbing
McKinney, Frank S.	Minneapolis	Merner, Thomas B.	Faribault	Mortensen, Nels G.	Minneapolis
McLaughlin, Byron H.	Minneapolis	Merrick, Charlotte T.	St. Paul	Mortenson, Howard O.	Menahga
McLaughlin, Edmund M.	Winona	Merrick, Robert L.	St. Paul	Mosby, Maurice E.	Long Prairie
McLeod, John J., Jr.	Rochester	Merrill, Robert W.	Morris	Moses, Royal R.	Kenyon
McManus, William F.	Princeton	Merriman, Lloyd L.	Duluth	Mosser, Donn G.	Minneapolis
McMurtrie, William B.	Minneapolis	Merritt, Wallace A.	Rochester	Moulton, K. B.	St. James
McNear, George R., Jr.	Mankato	Mesker, George H.	Olivia	Mourisen, Glenn J.	Fergus Falls
McNeil, John J.	Minneapolis	Messer, James W.	Rochester	Moyer, John B.	Duluth

## ALPHABETIC ROSTER

Muesing, William J.	New Ulm	Norman, David D.	St. Paul	Parker, Harry L.	Rochester
Muir, Walter F.	Browns Valley	Normann, Stephen T., Jr.	Waseca	Parker, Philip L.	Hallowell
Mulder, Donald W.	Rochester	Norris, Neil T.	Caledonia	Parker, Robert L.	Rochester
Mulholland, William M.	Minneapolis	*Noth, Henry W.	Minneapolis	Parker, Warren E.	Scheka
Muller, A. Eugene	No. St. Paul	Novak, Edward E.	New Prague	Parkhill, Edith M.	Rochester
Mulligan, Arthur M.	Brainerd	Nuebel, Charles J.	St. Paul	Parke, Thomas W.	Rochester
Mundahl, Harold R.	St. Paul	Nuesse, Walter G.	Springfield	Parson, E. Irvine	Duluth
Munson, Martin S.	Barnum	Nuesse, William F.	Minneapolis	Parson, E. Lillian B.	Elbow Lake
Murphy, Edmund P.	Minneapolis	Nuetzman, Arthur W.	Faribault	Parson, Lester R.	Elbow Lake
Murphy, Jack T.	St. Paul	Nutting, Roland E.	Duluth	Parsons, R. A.	St. James
Murphy, Joseph E.	Marshall	Nydal, Marvin J.	Minneapolis	Parsons, Ralph L.	Monterey
Murray, Robert A.	Hibbing	Nye, Katherine A.	St. Paul	Parsons, William B., Jr.	Rochester
Musachio, Nicholas F.	Foley	Nye, Lillian L.	St. Paul	Pasek, Anton W.	Cloquet
Muske, Marvin M.	Minneapolis	Nygren, William T.	Braham	Pasek, Edward A.	Minneapolis
Mussey, Mary E.	Rochester	Nylander, Emil G.	Minneapolis	Patch, Orien B.	Duluth
Mussey, Robert D.	Rochester	Nywall, Dean D.	Slayton	Patrick, Robert T.	Rochester
Musty, Nicholas J.	Minneapolis	O'Brien, J. C.	St. Paul	Pattiee, James J.	Minneapolis
Myers, Jay A.	Minneapolis	O'Brien, Louis T.	Breckenridge	Patterson, Hugh D.	Slayton
Myers, John W.	Canby	*O'Connor, Daniel C.	Eden Valley	Paulson, Elmer C.	Fergus Falls
‡ Myers, Richard L.	Selbyridge AFB, Mich.	O'Connor, Loren J.	St. Paul	Paulson, John A.	Minneapolis
Myers, Thomas T.	Rochester	O'Donnell, James E.	Minneapolis	† Paulson, Theodore S.	Fergus Falls
Myhre, James A.	Minneapolis	O'Hanlon, John A.	Minneapolis	Paulson, Wallace J.	Minneapolis
Myre, Clifford R.	Paynesville	O'Kane, Thomas W.	St. Paul	Pearce, Francis M., Jr.	Rochester
Myre, Theodore T.	Rochester	O'Keefe, James P.	St. Cloud	Pearall, R. P.	Virginia
† Nageli, Frank	Fergus Falls	O'Keefe, Mathew E., Jr.	Rochester	Pearson, Bror F.	Shakopee
Nagel, Harold D.	Minneapolis	O'Leary, John B.	Brainerd	Pearson, Fritz R.	St. Paul
Nakamura, James Y.	Deer River	O'Leary, Paul A.	Rochester	Pearson, Malcolm M.	St. Paul
Nash, Eldore B.	Eden Valley	O'Malley, Valentine	St. Paul	Pease, Gertrude L.	Rochester
Nash, Leo A.	St. Paul	O'Neill, John C.	Duluth	† Peck, Owen C.	Rochester
Naslund, Ames W.	Minneapolis	O'Phelan, E. Harvey	Minneapolis	-Pedersen, Arthur H.	St. Paul
Neal, Joe M.	St. Paul	O'Reilly, Bernard E.	St. Paul	Pedersen, Robert L.	Brainerd
Nealy, Donald E.	Adrian	† O'Shaughnessy, Edward J.	Camp Kilmer, N. J.	Pedersen, Roy C.	Duluth
Neary, Richard F.	Minneapolis	† Oberg, Carl M.	Minneapolis	Peltier, Leonard F.	Minneapolis
Neel, Harry B.	Albert Lea	Ochsner, Clarence G.	Wabasha	Peluso, Charles R.	Minneapolis
Neff, Walter S.	Virginia	Ockuly, Orville	St. Paul	Pemberton, Albert H.	Rochester
Nehring, Jesse P.	Feston	Odel, Howard M.	Rochester	† Pemberton, John	Rochester
Neibergs, Lidija	St. Paul	Ondland, Donald M.	Luverne	Penhall, Fletcher W.	Morton
Neibergs, Pauls.	St. Paul	Ondland, Mark E.	Detroit Lakes	Penk, Engward L.	Springfield
Neils, Vernon E.	Sauk Rapids	Ondland, Olin M.	Granite Falls	Penn, George E.	Mankato
Nelson, Bernette G.	Minneapolis	Ogden, Siegfried C. G.	Waseca	† Penn, Daniel F. V.	Duluth
Nelson, Bernice A.	Minneapolis	Ogden, Warner	St. Paul	Peppard, Thomas A.	Minneapolis
Nelson, Carleton A.	Minneapolis	Ohage, Justus	St. Paul	‡ Perkins, Douglas E.	Alexandria
Nelson, C. Barton	Minneapolis	Olaus, Olga	Minneapolis	Perlman, Everett C.	Minneapolis
Nelson, Clayton E.	Albert Lea	Olds, George H.	New Richland	Perlman, Herschel L.	Minneapolis
Nelson, Edward N.	Minneapolis	Olfelt, Paul C.	Minneapolis	Perry, Harold	Rochester
Nelson, Ernest J.	Londale	Olive, John T.	Mankato	Person, John P.	Albert Lea
Nelson, Glenn E.	Fairfax	Oliver, Irwin L.	Graceville	Perl, Albert L.	Canby
Nelson, Harvey	Minneapolis	Olmanson, Edmund G.	St. Peter	Peteler, Jennings C. L.	Minneapolis
† Nelson, Henry E.	Crookston	Olsen, Arthur M.	Rochester	Peterman, Albert F.	Rochester
Nelson, Kenneth L.	Warroad	Olsen, E. George	Minneapolis	Peters, Gustavus A.	Rochester
Nelson, Lloyd S.	Minneapolis	Olsen, Ralph L.	St. Paul	Petersen, D. H.	Northfield
Nelson, Loren E.	St. Paul	Olsen, Albert E.	Duluth	Petersen, Deane A.	Minneapolis
Nelson, Louis A.	St. Paul	Olsen, Albert J.	Owatonna	Petersen, Glenn L.	Minneapolis
Nelson, Louis A., Jr.	St. Paul	Olsen, Alton C.	Minneapolis	Petersen, Magnus C.	Rochester
Nelson, Luther A.	Rush City	Olsen, Archie O.	Duluth	Petersen, Peter C.	Minneapolis
Nelson, Maxine O.	Minneapolis	Olsen, Carl J.	Minneapolis	Petersen, Robert T.	St. Cloud
Nelson, Maynard C.	Minneapolis	Olsøn, C. Kent	Minneapolis	Petersen, William E.	Minneapolis
Nelson, Melvin S.	Granite Falls	Olsøn, Charles A.	St. Paul	† Peterson, Alice H.	Minneapolis
Nelson, O. L. Norman	Minneapolis	Olsen, Chester J.	Belle Plaine	Peterson, Alvin C.	Mora
Nelson, Robert H.	Benson	Olsen, Detlef M.	Minneapolis	Peterson, David B.	St. Paul
Nelson, Robert L.	Duluth	Olsen, Duane O. C.	Gaylord	Peterson, Donald H.	St. Paul
Nelson, Roy A.	Fergus Falls	Olsen, Ernest A.	Pine Island	Peterson, Edward N.	Virginia
Neson, Wallace I.	Minneapolis	Olsen, Grant E.	West Concord	Peterson, Harold O.	St. Paul
Nelson, Wilburn O. B.	Fergus Falls	Olsen, Gregory M.	Litchfield	Peterson, Henry	Minneapolis
Nelson, William C.	Rochester	Olsen, Lillian A.	Ah-gwah-ching	Peterson, Herbert W.	Minneapolis
Nerenberg, Samuel T.	Minneapolis	Olsen, Olof A.	Minneapolis	Peterson, Joel L. E.	St. Paul
Nesbitt, Samuel	Minneapolis	Olson, Philip A.	Minneapolis	Peterson, John H.	Duluth
Neshiem, Martin O.	Emmons	Olson, Rolland A.	Wayzata	Peterson, Kenneth A.	Marshall
Nessa, Curtin B.	St. Cloud	† Onifer, Theodore Michael.	Rochester	† Peterson, Lowell F. A.	Rochester
Nesse, J. A.	Austin	Ongard, L. Kenneth.	Houston	Peterson, Nordahl F.	Minneapolis
Nesset, Lawren B.	Minneapolis	Oppgaard, C. L.	Crookston	Peterson, Oliver H., Sr.	Minneapolis
Nesset, William D.	Minneapolis	Oppen, E. Gerhard.	Minneapolis	Peterson, Palmer A.	Minneapolis
Neumaier, Arthur	Glencoe	Oppen, Melvin G.	Wazwata	† Peterson, Peter E.	Minneapolis
Neumann, Conrad A.	Lewiston	Ospal, Lawrence J.	Willmar	Peterson, Roy A.	Vesta
Neumeister, Charles A.	Minneapolis	Opstad, Earl T.	Minneapolis	Peterson, Roy L.	White Bear Lake
Newnum, Raymond L.	Rochester	Orr, Burton A.	Faribault	Peterson, Stanley C.	Austin
Nice, Charles M.	Minneapolis	Ouraide, Anthony L.	Fairmont	Peterson, W. H.	Austin
Nichols, Donald R.	Rochester	Owen, Charles A., Jr.	Rochester	Peterson, Willard C.	Minneapolis
Nicholson, Murdoch A.	Duluth	Owens, Ben P.	Hibbing	Peterson, Willard E.	Willmar
Nicholson, Richard W.	Heron Lake	Owens, Frederick M., Jr.	St. Paul	Pettit, Julien V.	Minneapolis
Nickerson, John R.	Fairmont	Owens, William A.	Montevideo	Pettit, Leon J.	Minneapolis
Nickerson, Neil D.	Fairmont	Ozolins, Marta	Faribault	Pettet, George R.	Mabel
Nielson, Alvin M.	Northfield	Paal, Dwain J.	Minneapolis	† Pettet, John R.	Fort Ord, Calif.
Nietfeld, Aloys B.	Sauk Centre	Paciotti, Vincent J.	Minneapolis	Pewters, John T.	Minneapolis
Nilson, Helmer J.	North Mankato	Page, Raymond L.	St. Charles	Peyton, William T.	Minneapolis
Nimlos, Kenneth O.	St. Paul	Palen, Benjamin J.	Minneapolis	† Phalen, Patrick T.	Rochester
Nimlos, Lenore O.	St. Paul	Palmer, Clinton F.	Albert Lea	Phares, Otto C.	St. Cloud
Ninneman, Newton N.	Waconia	Pankratz, Peter J.	Mountain Lake	Philips, Kenneth A.	Minneapolis
Nisius, George	Duluth	Papermaster, Ralph.	Two Harbors	Phillips, Donald F.	Rochester
Noble, John F.	St. Paul	Parker, Theodore C.	Minneapolis	Philip, David R.	Watertown
Noble, J. Lawrence	St. Paul	Paris, Jaime	Rochester	Pierce, Charles H.	Wadena
Nolle, Donald J.	Hibbing	Park, Wilford E.	Minneapolis	Pierce, Jack R.	Wadena
Noran, Axel S. N.	Minneapolis	Parker, Charles W.	Wadsworth	Pierce, Robert B.	Virginia
Noran, Harold H.	Minneapolis			Pierson, Roy F.	St. Paul
Nobert, Carl E.	Cloquet			Pierson, Robert L.	St. Paul
Nord, J. Erling	Hallock			Piper, Monte C.	La Canada, Calif.
Nord, Robert E.	Edina			Piper, William A.	Mountain Lake
Nordin, Gustaf T.	Minneapolis			Pittelkow, Robert B.	Rochester
Nordland, Martin, Sr.	Minneapolis			Plasha, Matthew K.	Anoka
Nordland, Martin, Jr.	Minneapolis			Plass, Herbert F. R.	Minneapolis
Norman, Willard F.	Mora			† Platou, Erling S.	Minneapolis

## ALPHABETIC ROSTER

Rochester	Hallie	St. Paul	Richards, William B.	St. Cloud	Ryan, John J.	St. Paul
Rochester	Richard E.	Watertown	Richardson, Edward J., Jr.	St. Paul	Ryan, Joseph M.	St. Paul
Rochester	John F. M.	Minneapolis	Richardson, Robert J.	St. Paul	Ryan, Robert F.	Rochester
Rochester	Forest Lake	Forest Lake	Richdorff, Lawrence F.	Minneapolis	Ryan, William J.	Duluth
Duluth	Rochester	Rochester	Richter, David J.	Virginia	Rydberg, Wayne C.	Minneapolis
Duluth	Lake	Minneapolis	Rick, Paul F. W.	St. Paul	Rydberg, Vincent	Albert Lea
Monterey	Clouet	Minneapolis	Rickman, James H.	Rochester	Rygh, Harold N.	Atwater
Rochester	Anoka	Minneapolis	Rieke, Wellington W.	Wayzata	Rynda, Edwin R.	New Prague
Rochester	Minneapolis	Minneapolis	Rieschel, Elizabeth K.	Jordan	Rynearson, Edward H.	Rochester
Slayton	Falls	So. St. Paul	Rigler, Leo G.	Duarte, Calif.	Rysgaard, George M.	Northfield
St. James	John	Minneapolis	Ringer, Merritt G., Jr.	Rochester		
Monterey	Cambridge	Cambridge	Rinkley, Otto F.	Walker		
Rochester	Shakopee	Shakopee	Rinkey, Eugene	St. Paul		
Cloquet	Thomas L.	Rochester	Riordan, Elsie M.	Minneapolis	St. Cyr, Harry M., Jr.	Robbinsdale
Minneapolis	Poppe, Frederick H.	Minneapolis	Risch, Ronald E.	Minneapolis	St. Cyr, Kenneth J.	Robbinsdale
Duluth	Porter, Oliver M.	Atwater	Risser, Alden F.	Stewartville	Sabin, Frederick Chapman	Rochester
Rochester	Post, Edmund A.	St. Paul	Ritchie, Wallace P.	St. Paul	Sach-Rowitz, Alvan	Moose Lake
Rochester	Potter, David.	Cambridge	Ritt, Albert E.	St. Paul	Saffert, Cornelius A.	New Ulm
Minneapolis	Potter, Robert B.	Minneapolis	Ritzinger, Frederick R.	Randolph AFB, Texas	Safrescu, Sorin R.	Minneapolis
Slayton	Powelson, Myron H.	San Francisco, Cal.	Rizer, Dean K.	Minneapolis	Sahr, Walter G.	Hutchinson
Falls	Power, John E., Sr.	Duluth	Rizer, Robert I.	Minneapolis	Salassa, Robert M.	Rochester
St. James	Power, John E., Jr.	Duluth	Roach, Donald E.	St. Paul	Saliterman, Bernard I.	Minneapolis
Monterey	Pratt, Fred J., Sr.	Minneapolis	Robb, Edwin F.	Minneapolis	Salk, Richard J.	Albany
Rochester	Pratt, Fred J., Jr.	Minneapolis	Robbins, Charles P.	Winona	Salter, Reginald A.	Virginia
Cloquet	Pratt, George F.	Rochester	Robbins, Owen F.	Minneapolis	Sanderson, Samuel	Minneapolis
Minneapolis	Pratt, Joseph H., Jr.	Rochester	Roberts, Frank E.	Rochester	Sandene, Robert M.	Buffalo
Rochester	Preisinger, Irving A.	Osseo	Roberts, Lewis J.	Minneapolis	Sanderson, David J.	Fergus Falls
Virginia	Prem, Konrad A.	Dallas, Texas	Roberts, Oliver W.	Owatonna	Sandt, Karl E.	Minneapolis
Shakopee	Preston, Paul J.	Minneapolis	Roberts, Stanley E.	Faribault	Sandven, Nels O.	Paynesville
St. Paul	Priest, Robert E.	Minneapolis	Roberts, Stanley W.	Minneapolis	Sanford, Arthur H.	Rochester
St. Paul	Priestley, James T.	Rochester	Roberts, William B.	Minneapolis	Sanford, John B.	Chicago, Ill.
St. Paul	Prins, Leo R.	Albert Lea	Robertson, Paul A.	Austin	Sanford, Raymond A.	Mankato
St. Paul	Proeschel, Ray K.	Willmar	Robilliard, Charles M.	Faribault	Sarf, Oliver E.	Duluth
St. Paul	Proffitt, William E.	Minneapolis	Robinett, Robert W.	Worthington	Sargent, Edward C.	Austin
St. Paul	Prosek, Charles E.	Minneapolis	Robinson, Corland O.	Minneapolis	Sarnecki, M. M.	St. Paul
St. Paul	Pruitt, Raymond D.	Rochester	Robinson, Hugh P.	Rochester	Sartsmoen, Theodore	Pelican Rapids
St. Paul	Pugh, David G.	Rochester	Rock, William H.	Anoka	Sather, Edgar L.	Fosston
St. Paul	Pumala, Erven E.	Warren	Rocknem, Robert E.	Minneapolis	Sather, Edgar R.	Alexandria
St. Paul	Furnell, Don C.	Rochester	Rockwell, Curtis V.	Minneapolis	Sather, George A.	Fosston
St. Paul	Purves, G. Harland.	Buffalo	Rockwood, Philo H.	Fergus Falls	Sather, Richard N.	Fosston
St. Paul	Puunala, Reino H.	Cloquet	Rodda, Frederick C.	Minneapolis	Sather, Russell O.	Crookston
			Rodgers, Richard S.	Minneapolis	Satterlee, Howard W.	Lewiston
			Roehlke, Arthur B.	Elk River	Sauer, William G.	St. Paul
			Roemer, Henry J.	Winona	Savage, Francis J.	St. Paul
			Rogers, Charles W.	Winona	Sawarynuk, Iwan.	Waconia
			Rogers, Sydney F.	St. Paul	Sawatzky, William A.	Minneapolis
			Rogn, William G.	Spring Grove	Sawtell, Robert R.	Worthington
			Roholt, Christian L.	McIntosh	Sax, Milton H.	Duluth
			Rohrer, Christian A.	Worthington	Sax, Simon G.	Duluth
			Rokala, Henry E.	Virginia	Saxman, Gertrude O.	Georgetown
			Rolig, David H.	St. Paul	Sayre, George P.	Rochester
			Roll, Orris O.	St. Paul	Sborov, Abe M.	Minneapolis
			Rollins, Pat.	St. Charles	Scanlon, Paul W.	Rochester
			Rollins, Troy G.	Rochester	Schaaf, Frederick H. K.	Minneapolis
			Rome, Howard P.	Rochester	Schaar, Frances E.	Minneapolis
			Romness, Kenneth B.	Mound	Schade, Frederick L.	Worthington
			Rooke, E. D.	Rochester	Schaefer, Joseph C.	Rochester
			Rorem, Joseph A.	Appleton	Schaefer, Joseph F.	Owatonna
			Rosander, Phyllis.	Minneapolis	Schaefer, Kenneth F.	Minneapolis
			Rose, John T.	Lakefield	Schaefer, Wesley G.	Minneapolis
			Rosenbaum, David L.	Minneapolis	Schaffhausen, Mildred	Minneapolis
			Rosendahl, Frederick G.	Minneapolis	Schamber, Walter F.	Parkers Prairie
			Rosenfield, Abraham B.	Minneapolis	Schatz, Francis J.	St. Cloud
			Rosenfield, John H.	Minneapolis	Schedel, Alois McK.	Mankato
			Rosenthal, F. Harold.	Austin	Scheifley, Charles H.	Rochester
			Rosenthal, Robert.	St. Paul	Schedlup, N. H.	Miami, Fla.
			Ross, Alexander J.	Minneapolis	Scherer, Leslie Raymond	Minneapolis
			Rossberg, Raymond A.	Morris	Scherling, Sidney S.	Minneapolis
			Rossen, Ralph X.	Minneapolis	Schiellepen, George T.	Chaska
			Rotenberg, Robert J.	Minneapolis	Schirber, Martin J.	Grand Rapids
			Roth, Frederick D.	Mankato	Schirger, Alexander.	Rochester
			Roth, George C.	St. Paul	Schissel, Gregory A.	Minneapolis
			Rothnem, Morris S.	Minneapolis	Schmid, John F.	Duluth
			Rothschild, Harold J.	St. Paul	Schmidt, Herbert W.	Rochester
			Rothwell, Walter S.	Rochester	Schmidt, Hilmar R.	Gloversville, N. Y.
			Rous, Henry A.	Montevideo	Schmidt, Paul A.	Aurora, Ill.
			Rovestad, Randolph A.	Rochester	Schmidt, Paul G.	Granite Falls
			Rovestad, Roger A.	Fairmont	Schmidt, Ruben F.	Alden
			Rowe, Clarence J., Jr.	St. Paul	Schmidt, W. Robert.	Minneapolis
			Rowe, Olin W.	Duluth	Schmidke, Reinhard L.	St. Paul
			Rowles, Everett K.	Coleraine	Schmitt, S. C.	Los Angeles, Calif.
			Roy, Phil C.	St. Paul	Schmitz, Anthony A.	Mankato
			Ruchie, Warren H.	Willmar	Schmitz, Glenn P.	Little Falls
			Rucker, Charles W.	Rochester	Schneek, Jack I.	Waukesha, Wisc.
			Rucker, William H.	Minneapolis	Schneider, James A.	Rochester
			Ruff, Alan R.	Minneapolis	Schneider, Lawrence E.	Duluth
			Rognier, Edward A.	Minneapolis	Schneider, Paul J.	Adams
			Reid, James W.	So. St. Paul	Schnell, Frederick S.	Litchfield
			Reid, Harold A.	Minneapolis	Schoch, Robert B. J.	S. Paul
			Reid, Henry J.	St. Cloud	Schoeneberger, P. B.	Perham
			Reid, Robert W.	White Bear Lake	Scholpp, Otto W.	Hutchinson
			Reifsnider, William Henry, III.	Rochester	Scholz, Donald A.	Rochester
			Reiley, Richard E.	Minneapolis	Schons, Edward.	St. Paul
			Reinke, George F.	New Ulm	Sckosow, George W.	Erskine
			Reitnhardt, James H.	Alexandria	Schottler, Max E.	Minneapolis
			Reitemeier, Richard J.	Rochester	Schreiner, Leon H.	Rochester
			ReMine, William H., Jr.	Rochester	Schrader, Charles H.	Pottstown, Pa.
			Remole, William D.	Minneapolis	Schrockenstein, Hugo F.	St. Paul
			Remsberg, R. R.	Tracy	Schroeder, Albert J.	Minneapolis
			Reno, George L.	Rochester	Schroepel, John E.	Winthrop
			Repligole, William H.	Los Angeles, Calif.	Schuldt, Frederick C.	St. Paul
			Rice, Carl O.	Minneapolis		
			Rice, Frank B.	Minneapolis		
			Rice, Fred A.	Minneapolis		
			Rice, Hagbart G.	Moorhead		
			Rice, Roberta G.	Minneapolis		
			Richards, Albert M.	St. Paul		
			Richards, Ernest T. F.	St. Paul		

## ALPHABETIC ROSTER

Schultz, Alvin L.	Minneapolis	Karlstad
† Schultz, J. Albert	Albert Lea	Worthington
Schultz, J. Harold	Minneapolis	Rochester
Schultz, Peter J.	Minneapolis	Rochester
† Schulze, Albert G.	St. Paul	Minneapolis
Schulze, William M.	Minneapolis	St. Paul
Schumacher, John W.	Robbinsdale	Minneapolis
Schut, John W.	Anoka	Minneapolis
Schutz, Elmer S.	Mountain Lake	Minneapolis
Schwartz, E. Robert	Minneapolis	Duluth
Schwartz, Virgil J.	Minneapolis	Blue Earth
Schweiger, Theodore R.	Hibbing	Rochester
Schwyzer, Arnold G.	St. Paul	Hutchinson
Schwyzer, Hanna C.	St. Paul	Minneapolis
Schwyzer, Marguerite	St. Paul	Lake Crystal
Sciarrà, Paschal A.	Rochester	Rochester
Scimeca, William B.	Rochester	Minneapolis
Scott, Eugene E.	St. Paul	Minneapolis
Scott, Horace G.	Minneapolis	Rochester
Scudamore, Harold K.	Rochester	Willmar
Seaberg, John A.	Minneapolis	Rochester
Seashore, R. T.	Duluth	Gardena, Calif.
‡ Seay, James Elbert, III	Big Spring, Texas	Rochester
‡ Sebrechts, Paul	Great Lakes, Ill.	Red Wing
Seery, Thomas M.	Austin	Willmar
Seham, Max	Minneapolis	Lake Crystal
Seifert, Milton H.	Excelsior	Rochester
Seifert, Otto J.	New Ulm	Rochester
Sekhon, Mohan S.	St. Paul	Minneapolis
† Selby, John B.	Rochester	St. Paul
Seick, Wolfgang	Minneapolis	Grand Marais
Selton, Thomas H.	Rochester	Rochester
* Seljeskog, S. R.	Minneapolis	Minneapolis
Sells, Richard J.	No. St. Paul	Monticello
Selmo, Joseph D.	Norwood	Lester Prairie
Senisch, Robert D.	Minneapolis	Mankato
† Senkler, George E.	St. Paul	Kiester
Senn, Edward W.	Owatonna	St. Paul
Sethre, Arthur E.	Fergus Falls	Ely
Setzer, Robert J.	St. Paul	Minneapolis
Shandorf, James F.	Minneapolis	Windom
Shannon, William R.	St. Paul	St. Paul
Shaperman, Eva L.	Minneapolis	Mankato
Shapiro, Sidney K.	Minneapolis	Rochester
Sharp, David V.	Minneapolis	Spicer
Sharpe, Wendell S.	Minneapolis	Minneapolis
Shaver, Ward	Fergus Falls	St. Paul
Shaw, Howard A.	Minneapolis	Fergus Falls
Shea, Andrew W.	Minneapolis	St. Paul
Sheedy, Chester L.	Minneapolis	Rochester
Shelander, Marcus I.	Austin	Le Sueur
Sheffield, Warren N.	Lorraine, Ohio	Lake City
Sheppard, Charles G.	Pacific Palisades, Cal.	St. Paul
Sher, David A.	Virginia	Willmar
Sher, Lewis	Minneapolis	Willmar
Sherman, Alfred G.	Albert Lea	Duluth
Sherman, Carnot H.	Bayport	Duluth
Sherman, Charles L.	Luverne	Duluth
Sherman, Lloyd F.	Minneapolis	Minneapolis
Sherman, Royal V.	Red Wing	Minneapolis
† Sherwood, George E.	Kimball	New Haven, Conn.
Shick, Richard M.	Rochester	Minneapolis
Shields, Jack W.	Rochester	Minneapolis
Shillington, Maurice A.	Minneapolis	Minneapolis
† Shirai, Shohei	Fort Harrison, Indiana	Minneapolis
Short, Jacob	St. Paul	Minneapolis
Shorts, John F.	Minneapolis	Minneapolis
† Sidell, Franklin D.	Butte, Montana	Minneapolis
Siegel, Clarence	St. Paul	Minneapolis
Siegel, John S.	Virginia	Minneapolis
Siegmund, William C.	Minneapolis	Minneapolis
Siekert, R. G.	Rochester	Minneapolis
Silas, Ralph M.	Minneapolis	Minneapolis
† Silver, Arthur W.	Southbridge, Mass.	Minneapolis
Silver, John D.	Minneapolis	Minneapolis
Simson, Carl	Barnesville	Minneapolis
Simmonds, Harry N.	Prior Lake	Minneapolis
Simmons, William Henry	Lexington, Ky.	Minneapolis
Simons, Bernard H.	Chaska	Minneapolis
† Simons, Edwin J.	Minneapolis	Minneapolis
Simons, Jalmar H.	Minneapolis	Minneapolis
Simons, Leander T.	St. Paul	Minneapolis
Simonsen, Donald B.	Minneapolis	Minneapolis
Simonton, Kinsey MacL.	Rochester	Minneapolis
† Simpson, Ellery D.	Phoenix, Ariz.	Minneapolis
Sinamarck, Andrew	Hibbing	Minneapolis
Singer, Benjamin J.	St. Paul	Minneapolis
Sinsky, Melvin B.	Minneapolis	Minneapolis
Siperstein, David M.	Minneapolis	Minneapolis
Sisk, Harvey E.	St. Cloud	Minneapolis
Sisler, Clifford E.	Grand Rapids	Minneapolis
Sisterman, Thomas J.	Minneapolis	Minneapolis
† Sivertsen, Andrew	Minneapolis	Minneapolis
† Sivertsen, Ivar	Minneapolis	Minneapolis
Sjoding, J. Donald	Mankato	Minneapolis
Sjostrom, Lawrence E.	St. Peter	Minneapolis
Skafie, William F.	Little Falls	Minneapolis
Skauq, Harold M.	Chatfield	Minneapolis
Skinner, Abbott	St. Paul	Minneapolis
† Skinner, Harvey O.	St. Paul	Minneapolis
Skjold, Arthur C.	Minneapolis	Minneapolis
Skoogbee, Rudolph B.	Karlstad	Minneapolis
Slater, Sidney A.	Worthington	Rochester
Slocumb, Charles H.	Rochester	Rochester
Smid, Arthur C.	Minneapolis	Minneapolis
Smiley, John T.	Minneapolis	Minneapolis
Smisek, Elmer A.	St. Paul	Minneapolis
Smisek, Frank M.	Minneapolis	Minneapolis
Smith, Adam M.	Minneapolis	Minneapolis
Smith, Archie M.	Minneapolis	Minneapolis
Smith, Baxter A.	Minneapolis	Minneapolis
Smith, Cyril M.	Duluth	Minneapolis
Smith, Donald V.	Blue Earth	Minneapolis
† Smith, Frederick L.	Rochester	Minneapolis
Smith, George R.	Hutchinson	Minneapolis
Smith, Graham G.	Minneapolis	Minneapolis
Smith, Harry J.	Lake Crystal	Minneapolis
† Smith, Harry L.	Rochester	Minneapolis
Smith, Homer R.	Minneapolis	Minneapolis
Smith, John L.	Rochester	Minneapolis
Smith, Lloyd A.	Willmar	Minneapolis
Smith, Lucian A.	Rochester	Minneapolis
† Smith, Margaret I.	Gardena, Calif.	Minneapolis
Smith, Meredith P.	Rochester	Minneapolis
Smith, Myron W.	Red Wing	Minneapolis
Smith, Norvin R.	Willmar	Minneapolis
Smith, Paul M.	Lake Crystal	Minneapolis
Smith, Reginald A.	Rochester	Minneapolis
Smith, Ross H., Jr.	Rochester	Minneapolis
Smith, Theodore S.	Minneapolis	Minneapolis
Smith, Vernon D. E.	St. Paul	Minneapolis
Smith, Wallace R.	Grand Marais	Minneapolis
Smith, William G.	Rochester	Minneapolis
Smith, William T.	Minneapolis	Minneapolis
Smorstok, Matthew B.	Monticello	Minneapolis
Smyth, John J.	Lester Prairie	Minneapolis
Snider, Howard R.	Mankato	Minneapolis
Snyder, Clifford D.	Kiester	Minneapolis
Snyder, George W.	St. Paul	Minneapolis
Snyker, Omer E.	Ely	Minneapolis
Soderlind, Ragnar T.	Minneapolis	Minneapolis
Sogge, Ludwig L.	Windom	Minneapolis
Sohlbert, Olof I.	St. Paul	Minneapolis
† Sohmer, A. E. J.	Mankato	Minneapolis
Solhaug, Samuel B., Sr.	Minneapolis	Minneapolis
Solhaug, Samuel B., Jr.	Minneapolis	Minneapolis
† Solsem, Frederick N. S.	Spicer	Minneapolis
Solvason, Harold M.	Minneapolis	Minneapolis
Sommerdorf, Vernon L.	St. Paul	Minneapolis
Sommers, M. Duane	Fergus Falls	Minneapolis
Sommerville, Robert L.	Rochester	Minneapolis
Somers, Ben	St. Paul	Minneapolis
Sonnensy, Nels N.	Le Sueur	Minneapolis
Sontag, David W.	Lake City	Minneapolis
Sorem, Milton B.	St. Paul	Minneapolis
Sorum, F. T.	Willmar	Minneapolis
Soshea, John W.	Rochester	Minneapolis
Soucheray, Philip H.	St. Paul	Minneapolis
Soule, Edward H.	Rochester	Minneapolis
Souster, Benjamin B.	St. Paul	Minneapolis
Sowada, Ernest J.	St. Paul	Minneapolis
Spain, W. Thomas.	Princeton, N. J.	Minneapolis
Spang, Anthony J.	Duluth	Minneapolis
Spang, James S.	Duluth	Minneapolis
Spano, William M.	Duluth	Minneapolis
Spano, Joseph P.	Minneapolis	Minneapolis
Spear, Harold C.	New Haven, Conn.	Minneapolis
Spencer, Bernard J.	Minneapolis	Minneapolis
† Sperl, Michael P., Jr.	Rochester	Minneapolis
Spink, Wesley W.	Minneapolis	Minneapolis
Sponsel, Kenneth H.	Minneapolis	Minneapolis
Sprafka, Gregory A.	St. Paul	Minneapolis
Sprafka, Joseph L.	St. Paul	Minneapolis
Sprafka, Joseph M.	St. Paul	Minneapolis
Sprague, Randall G.	Rochester	Minneapolis
† Spratt, Charles N.	Minneapolis	Minneapolis
Spurzem, Raymond J.	Aspen	Minneapolis
Stadem, Clifford J.	Twin Valley	Minneapolis
Stahl, George W.	Austin	Minneapolis
Stahler, Paul A.	Jordan	Minneapolis
† Stahn, Louis H.	Modesto, Calif.	Minneapolis
Stahr, Aubrey C.	Hopkins	Minneapolis
Stam, John	Worthington	Minneapolis
Stanford, Charles E.	Minneapolis	Minneapolis
† Stangl, Philip E.	St. Cloud	Minneapolis
Stanley, Court R.	Minneapolis	Minneapolis
Starekow, Milton D.	Thief River Falls	Minneapolis
Staub, Henry P.	Minneapolis	Minneapolis
Stauffer, Maurice H.	Rochester	Minneapolis
Steffens, Leon A.	Red Wing	Minneapolis
Stein, Harold A.	Rochester	Minneapolis
Stein, Raymond J.	Pierz	Minneapolis
Stein, William A.	Ely	Minneapolis
Steinberg, Charles L.	St. Paul	Minneapolis
Steiner, Leo E.	Philadelphia, Pa.	Minneapolis
Steinhilber, Richard M.	Rochester	Minneapolis
Steinmetz, Rodney D.	Rochester	Minneapolis
Stelter, Lloyd A.	Minneapolis	Minneapolis
Stensrud, Harold L.	Alexandria	Minneapolis
Stennes, John L.	Minneapolis	Minneapolis
Tam, Ernest C.	Minneapolis	Minneapolis
Tangen, George M.	Minneapolis	Minneapolis
Tani, George T.	St. Paul	Minneapolis
Tanquitt, Edwin J.	Alexandria	Minneapolis
Taylor, Joseph H.	Minneapolis	Minneapolis
Taylor, William E.	Minneapolis	Minneapolis
Teeter, Richard R.	Minneapolis	Minneapolis
Teich, Kenneth W.	Duluth	Minneapolis
Teisberg, John E.	St. Paul	Minneapolis
Tenner, Robert J.	Minneapolis	Minneapolis
Terrell, Bernard J.	Nopeming	Minneapolis
Tesch, Gordon H.	Elk River	Minneapolis
Teitle, James P.	Duluth	Minneapolis
Thabes, J. A., Jr.	Braimont	Minneapolis
Thayer, Ellsworth A.	Fairmont	Minneapolis
Thielken, Robert D.	St. Michael	Minneapolis
Thiem, Chester E.	Mankato	Minneapolis
Thill, Leonard J.	Balaton	Minneapolis
Thomas, George E.	Minneapolis	Minneapolis
Thomas, John V.	Duluth	Minneapolis
Thomas, William H.	Howard Lake	Minneapolis
Thomas, A. Boyd	Minneapolis	Minneapolis
Thompson, Arthur	Minneapolis	Minneapolis

## **ALPHABETIC ROSTER**

St. Paul Minneapolis Rochester	Thompson, Carl O.	Litchfield	Walder, Harold J.	Duluth	Wilwolske, R. J.
Fulda	Thompson, Floyd A.	St. Paul	Waldron, Carl W.	Hopkins	Will, Charles B.
Faribault	Thompson, Gershom J.	Rochester	Walfred, Kari A.	St. Cloud	Will, W. W.
St. Paul	Thompson, Murray C.	Rochester	† Walker, A. E.	St. Paul	Willcutt, Clarence E.
Crookston	Thompson, Russell A.	Cosmos	Walker, Arthur E.	St. Paul	Willer, Stanley H.
Minneapolis	Thompson, Willis H.	Minneapolis	Wall, Carl R.	Minneapolis	Williams, Arthur B.
Minneapolis	Thompson, James M.	Austin	Wall, James O.	St. Paul	Williams, Bruce F. P.
Rochester	Thoreson, M. C. Bernice	So. St. Paul	Wallace, Martin O.	Duluth	Williams, Charles A.
Rochester	Thoreson, David S.	Minneapolis	Waller, Joseph D.	Pine City	Williams, Clayton K.
Rochester	Thorsen, Stuart V.	Minneapolis	Walling, Jack.	Oakland, Calif.	Williams, George E.
Rochester	Thouin, Laurence G.	Hibbing	Walonic, Albert L.	St. Louis Park	Williams, Henry L.
Mankato	Thuringer, Carl B.	St. Cloud	Walsh, Edward F.	St. Paul	Williams, Hugh O.
Minneapolis	Thyell, Desmond M.	Minneapolis	Walsh, Francis M.	Minneapolis	Williams, Leon A.
St. Paul	Thyell, Fred A.	Moorhead	Walsh, William T.	Minneapolis	Williams, M. M.
St. Paul	Thyell, Harold R.	Crookston	Walter, Clarence Wm.	St. Paul	Williams, Marland R.
Minneapolis	Thyell, Vernon D.	Hawley	Walter, Frederick H.	International Falls	Williams, Richard A.
Minneapolis	Tichy, Fae Y.	Pasadena, Calif.	Walter, William E.	Wanamingo	Williams, Robert.
St. Paul	Tiff, Cyril R.	St. Paul	Walters, Waltman	Rochester	Williams, Winfield T.
Little Falls	Tillich, Jan H.	Rochester	Wandke, Otto E.	Fairmont	Williamson, Harold A.
Minneapolis	Tingdale, August C.	Minneapolis	Wangenstein, Owen H.	Minneapolis	Wilmot, Cecil A.
St. Paul	Tingdale, Carlyle	Hibbing	Ward, Louis E.	Rochester	Wilmot, Harold E.
Watonwan	Tinkham, Robert G.	Minneapolis	Ward, Percy A.	Minneapolis	Wilson, Clyde E.
St. Paul	Tirud, Leonard A.	Minneapolis	Warner, James J.	Perham	Wilson, J. Allen
Northfield	Tobin, John D.	Hibbing	Warren, Cecil A.	St. Paul	Wilson, James V.
Duluth	Tomhave, Wesley G.	Minneapolis	Wasmund, Clarence W.	Red Wing	Wilson, Louis J.
Duluth	Togen, Lyle A.	St. Paul	Watson, Loren F.	Alexandria	Wilson, Robert B.
Northfield	Toon, Robert W.	Minneapolis	Waters, Alvin W.	Minneapolis	Wilson, Robert E.
Duluth	Torghele, John R.	Hastings	Watkins, Charles H.	Rochester	Wilson, Rolland H.
St. Paul	Toseland, Noel E.	Duluth	Watkins, John A.	Wells	Wilson, Viktor O.
Duluth	Trach, Benedict B.	Minneapolis	Watkins, Lee C., Jr.	Rochester	Wilson, Warren E.
Windom	Trach, Robert R.	St. Paul	Watson, Alexander M.	Royalton	* Wilson, Northfield
Bellevue	Trager, Carl A.	Faribault	Watson, C. Gordon	Minneapolis	* Wiltout, Irving G.
St. Paul	Travis, James S.	St. Paul	Watson, Cecil J.	Minneapolis	Winchell, Paul
Duluth	Traxler, J. Felix	Henderson	Watson, Eleanor J.	Rochester	Windsheim, John H.
Northfield	Traynor, Mack V., Jr.	Rochester	Watson, John R.	Rochester	Winge, H. C.
Duluth	Tregilgas, Harold R.	St. Paul	Watson, P. Theodore	St. Paul	Winn, William E., Jr.
St. Paul	Tregilgas, Richard B.	St. Paul	Watson, Percy T.	Miami, Fla.	† Winnick, Joseph B.
Duluth	Trost, Henry B.	Mankato	Watson, Robert M.	Morris	Winter, John A.
Minneapolis	Troup, Richard H.	Rochester	Watson, Sydney Wm.	Royalton	† Winter, Malcolm D., Jr.
Duluth	Tucker, Richard B.	Minneapolis	Watson, Virgil A.	Detroit Lakes	Winther, Nora M. C.
Rochester	Tucker, Richard B.	Minneapolis	Watson, William H. A.	St. Paul	Wipperman, Frederic F.
Stillwater	Tuohy, Edward L.	Santa Barbara, Calif.	Watson, William J.	Newport	Wisness, Osmund A.
Minneapolis	Tuohy, Edward L.	St. Paul	Watson, Clarence E.	St. Paul	* Witham, Carl A.
St. Paul	Turnacliff, Dale D.	Rochester	Waud, Robert E.	Rochester	Withaus, Melvyn E.
Minneapolis	Turner, John C., Jr.	Rochester	Waugh, John M.	Rochester	Wittich, Frederick W.
Minneapolis	Turner, John A.	Winona	† Weaver, Myron Mc....	Vancouver, B. C., Canada	Wittrock, Louis H.
Minneapolis	Tweeddy, Robert B.	Winona	Weaver, Paul H.	Faribault	Wohlbrake, Arthur A.
Minneapolis	Twiggs, Leo F.	Austin	Webb, Edgar A.	Minneapolis	Wohlbrake, A. Cabot.
Minneapolis	Twomey, John E.	Minneapolis	Webb, Roscoe C.	Minneapolis	Wohlbrake, Clarence F.
Ely	Ubel, Frank A.	St. Paul	Webber, Fred L.	North Mankato	Wohlbrake, Edwin J.
London	Ude, Walter H.	Minneapolis	Webber, Richard J.	Springfield	Wohlbrake, John C.
Hoffman	Uhlery, Charles G.	Crookston	Webber, Harry M.	St. Louis Park	St. Clair
Rochester	Uihlein, Alfred	Rochester	Webber, Lowell W.	St. Paul	Wolf, Alfred H.
Rochester	Ulrich, Christian A.	Rochester	Wedges, Deno J.	Winnipeg	Wolf, Herman J.
St. Paul	Ulrich, Henry L.	Minneapolis	Weed, Lyle A.	Rochester	Wolff, John M.
Minneapolis	Ulvestad, Harold S.	Minneapolis	Weeks, Richard E.	Rochester	Wolff, John W.
Duluth	Underdahl, L. O.	Rochester	Weiner, Alan D.	Rochester	Wollaeger, Eric
Minneapolis	Undine, Clyde A.	Minneapolis	Weiss, James F.	Rochester	Wolstan, Simon D.
Duluth	Updike, Edwin H., II.	Rochester	Weissberg, Benjamin A.	Rochester	Wolter, Frederick H.
Minneapolis	Urberg, Sofus E.	Duluth	Weisberg, Maurice	St. Paul	Woltjen, Myron J.
Minneapolis	Utendorfer, Robert W.	Minneapolis	Weissberg, Raphael J.	Minneapolis	Wolman, Henry Wm. F.
Minneapolis	Utz, David C.	Rochester	Weiss, Carl A.	Hastings	† Wood, Harry G.
Minneapolis	Vadheim, Alfred L.	Tyler	Welch, John S.	Rochester	Wood, Lloyd T.
Minneapolis	Valentine, Walter H.	Tracy	Wellman, William E.	Rochester	* Woodington, George F.
St. Paul	Van Bergen, Frederick H.	Minneapolis	Wells, Arthur H.	Duluth	Woodward, Edward, Jr.
Duluth	Van Cleve, Horatio P.	Austin	Wells, Walter B.	Jackson	Woolner, Lewis B.
Mankato	Van Herik, Martin	Rochester	Wendland, John P.	Minneapolis	Word, Harlan L.
St. Paul	Van Meier, Henry	Stillwater	Wendt, H. Paul.	Chief River Falls	Workman, Warner G.
Waseca	Van Rooy, George T.	Thief River Falls	Werner, Walderman T.	St. Cloud	Woyda, William C.
Branch	Van Ryzin, Donald J.	Duluth	Wente, Harold A.	Rochester	* Wray, William E.
Rochester	Vanderover, Harry W.	Rochester	† Wentworth, Albert J.	Mankato	Campbell, Austin
Minneapolis	Varco, Richard L.	St. Paul	Wenzel, Gilbert P.	St. Paul	Wright, Robert R.
Minneapolis	Vaughan, Victor M.	Truman	Werner, George	Minneapolis	Wright, Thomas D.
Minneapolis	Vaughn, Louis D.	Rochester	Wesolowski, Stanley P.	Minneapolis	Wright, Wale S.
Minneapolis	Veirs, Dean M.	St. Paul	† West, Catherine C.	Minneapolis	Wright, William S.
Minneapolis	Veirs, Ruby J. S.	St. Paul	Westby, Magnus	Madison	Wuest, John H.
Minneapolis	Venable, Alexander E.	St. Paul	Westby, Norval M.	Madison	Wyatt, Oswald S.
Minneapolis	Verby, John E.	Rochester	† Western, Alvin E.	Montgomery	Minneapolis
Minneapolis	Vernmund, Halvor	Minneapolis	Western, Fred C.	Montgomery	Yaeger, Wilbert W.
Minneapolis	Vezina, John C.	Mapleton	Westover, D. E.	St. Paul	* Yamamoto, Joe.
Minneapolis	Vik, A. Elliott.	Minneapolis	Westrup, John E.	Lanesboro	Oklahoma City, Okla.
Minneapolis	Vik, Melvin	Anoka	Wetherby, Macnider	Minneapolis	Ylvisaker, Ragnvald S.
Minneapolis	Viring, Hildegard	Caledonia	Wetzel, Earl V.	St. Paul	Yoerg, Otto W.
Minneapolis	Viring, Mark P.	Wells	Wexler, Harold M.	Minneapolis	Young, Henry H.
Minneapolis	Viring, Richard P.	Wells	Wheeler, Daniel W.	Duluth	Young, John V. W.
Duluth	Vitov, T. M.	Minneapolis	Wheeler, Robert W.	Minneapolis	Young, Thomas O.
Minneapolis	Vix, Vernon A.	Worthington	Whisnant, Jack Page.	Rochester	Younger, Lewis I.
Minneapolis	Vogel, Howard A. L.	New Ulm	Whiteacre, John C., II	St. Paul	Youngren, Everett R.
Minneapolis	Vollmer, Frederick J.	Winona	White, Asher A.	Minneapolis	Yue, Wen Y.
Minneapolis	Von Drasek, Joseph	Mankato	White, S. Marx.	Minneapolis	* Oak Terrace
Minneapolis	Vreeland, Oliver H.	Rochester	Whitesell, Lloyd A.	Minneapolis	Zachman, Albert H.
Minneapolis	Waas, Charles W.	St. Paul	Whitson, Sidney A.	Albert Lea	Zachman, Leo L.
Duluth	Wagner, Norman W.	Benson	Whitemore, Dexter D.	Bemidji	Zagaria, James F.
Duluth	Wagoner, James M.	Harmony	Widen, Wilford F.	Minneapolis	Zahrendt, O. Lewis.
Lake	Walquist, Harold F.	Minneapolis	Wikoff, Howard M.	Crookston	Zarling, V. Richard.
Minneapolis	Wakefield, Elmer G.	Rochester	Wilcox, G. Charles.	Albert Lea	Zaworski, Leo A.
Minneapolis	Wakim, Khalil G.	Rochester	Wilder, Kenneth W.	Minneapolis	Zee, Urban H.
Minneapolis	Waal, Charles W.	St. Paul	Wilder, Robert L.	Minneapolis	Melrose
Duluth	Wagner, Norman W.	Benson	Wilder, Russell M.	Rochester	St. Paul
Duluth	Wagoner, James M.	Harmony	Wilder, Russell M., Jr.	Minneapolis	St. Paul
Lake	Walquist, Harold F.	Minneapolis	Wilken, Paul A.	Minneapolis	Fairmont
Minneapolis	Wakefield, Elmer G.	Rochester	Wilkinson, Stella L.	St. Paul	Duluth
Minneapolis	Wakim, Khalil G.	Rochester	** Wilkinson, Stella L.	Minneapolis	Minneapolis

# General Interest

Minnesota physicians are invited to submit items of "general interest" concerning themselves or their colleagues to MINNESOTA MEDICINE, 2642 University Avenue, St. Paul 14, Minnesota. Only the facts are needed—who? what? where? when? why?—since items are rewritten for uniformity of style.

\* \* \*

**Dr. Gordon R. Kamman** and attorney **Charles Murane**, St. Paul, discussed "Medical-Legal Relationships" at a joint meeting of the Southwestern Minnesota Medical Society and Bar Association in Worthington on April 9.

\* \* \*

Principal speaker at the annual banquet of the sixth annual convention of the Student American Medical Association in Chicago on May 5 was Dr. Walter Judd, congressman from Minnesota.

\* \* \*

**Dr. Raymond C. Read**, resident assistant in surgery at the University of Minnesota Hospitals, was one of several faculty members who described "Some Outstanding Achievements of Our University" at a one-day institute on March 17 at the university. Dr. Read discussed advances in heart surgery.

\* \* \*

**Dr. Carl Fritzsche** of New Ulm was elected president of the Brown County Medical Society at an early spring meeting of the group. Dr. E. J. Wohlrabe, Springfield, was named vice president, with Dr. Milton Kaiser, New Ulm, secretary-treasurer. Dr. Rolf Hovde, Winthrop, was selected as delegate with Dr. J. E. Schroeppel of Winthrop as alternate.

\* \* \*

An alumni achievement award has been presented to Dr. Malcolm M. Hargraves, Rochester, by his alma mater, Ohio State University College of Medicine. Dr. Hargraves, who received his medical degree at the school in 1933, is now a hematology consultant at the Mayo Clinic and an associate professor in the Mayo Foundation.

\* \* \*

**Dr. Sidney O. Hughes**, Winona, recently received his certification in internal medicine by the American Board of Internal Medicine. Dr. Hughes has been associated with the Winona Clinic for the past two years.

\* \* \*

**Dr. E. A. Meyerding**, executive secretary of the Minnesota Tuberculosis and Health Association, was presented with the William C. Anderson service award at a meeting of the American Association for Health, Physical Education and Recreation on March 25 in Chicago. The award was made in honor of Dr. Meyerding's work in furthering health education and health services for Minnesota school children.

\* \* \*

**Dr. J. V. Carlson** and **Dr. Richard Runquist** are now established in a new clinic building, which was recently completed for them at Westbrook.

At the end of March Dr. and Mrs. Walter A. Fansler, Wayzata, sailed from Jersey City, New Jersey, bound for the Middle East Medical Assembly, which was held in Beirut, Lebanon, in April. The Fanslers are expected to return to Minnesota in June.

\* \* \*

**Dr. Russell M. Wilder**, Rochester, emeritus staff member of the Mayo Clinic, was elected president of the National Vitamin Foundation at the annual meeting of the group in New York on March 8.

\* \* \*

**Dr. A. W. Graham**, Chisholm, has been invited to have an exhibit at the meeting of the American Medical Association at Northwestern University in June. The exhibit, which was shown at the meeting of the Minnesota State Medical Association last year, presents a study of blood pressure in children between the ages of four and eighteen. Information for the study was compiled by Dr. Graham over a period of thirty-nine years.

\* \* \*

**Dr. Grafton A. Smith**, former clinical instructor in surgery at the University of Minnesota Medical School, has been appointed assistant professor of surgery at the University of Missouri.

\* \* \*

Honorary Minnesota state chairman for Mental Health Week, April 29 to May 5, was Dr. Charles W. Mayo, Rochester, who was appointed to the post by the Minnesota Association for Mental Health.

\* \* \*

**Dr. John Anderson**, professor and head of the department of pediatrics at the University of Minnesota, conducted a clinic at the opening of a new pediatrics department at Hibbing General Hospital, Hibbing, on March 24. At an evening dinner meeting he presented a discussion of current advances in pediatrics. The hospital's new pediatrics department is equipped to handle thirty-two patients, from infants to sixteen-year-olds. Facilities include isolation rooms, formula preparation room, recreation room and library.

\* \* \*

**Dr. James T. Priestley**, Rochester, presented the first W. Fulton Gillespie Memorial Lecture at a combined meeting of the American College of Surgeons, the Canadian Medical Association and the University of Alberta faculty of medicine at Edmonton, Alberta, Canada, on April 23.

\* \* \*

More than 125 physicians from all sections of the country attended an eight-day refresher course called Mediclinics of Minnesota, which was held at Fort Lauderdale, Florida, March 5 to 14. Sponsored by the American Academy of General Practice, the course was conducted by a panel of ten instructors from the University of Minnesota Medical School. The course was the first of its type to be offered on a national scale.

(Continued on Page A-34)

MINNESOTA MEDICINE

## Notes on the Diagnosis and Management of "Dizziness"

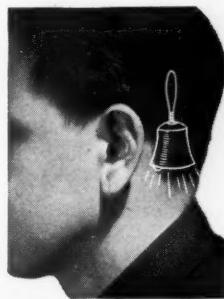
### III. Ménière's Syndrome



**1. Paroxysmal Whirling Vertigo.** This consists of sudden attacks of dizziness, often when the patient is at rest or asleep. The patient may feel that he himself is whirling or that fixed objects about him are whirling. The attack usually lasts for a few minutes; occasionally it is severe for weeks or subacute for months.



**2. Subtotal Hearing Loss.** Deafness will usually affect the high tones and it may be unilateral or bilateral. Sometimes the hearing loss is severe and also progressive.



**3. Tinnitus.** This is usually unilateral and present in the ear with greater hearing loss and is without a definite pattern.

Fewer diagnostic errors<sup>1</sup> will result if a "triad of symptoms" is required of patients with suspected Ménière's syndrome. These are the symptoms of typical Ménière's syndrome:

1. Severe paroxysmal vertigo which may be of two types; either the patient feels that he is whirling or that objects about him are whirling.
2. Fluctuating subtotal hearing loss, usually affecting the higher tones, is noted at the same time as vertigo.
3. Tinnitus, usually unilateral, is associated with the deafness and dizziness.

With Ménière's syndrome there is no definite localization<sup>2</sup> by the Bárány (vestibular reaction) test and results of the caloric test are not diagnostic. Physical examination should rule out disease of the central nervous or cardiovascular systems before a diagnosis is made.

"Treatment with Dramamine® . . . is effective<sup>3</sup> in aborting and preventing attacks of Ménière's syn-

drome . . . will prevent or arrest attacks of vertigo. It will also reduce the intensity of the tinnitus and so may save some of the hearing in the affected ear."

Dramamine is recommended for Ménière's syndrome as the sole therapy or in combination with other treatment programs.

It is a therapeutic standard also for motion sickness and is useful for relief of nausea and vomiting of radiation sickness and fenestration procedures.

Dramamine (brand of dimenhydrinate) is supplied in tablets (50 mg.); Supposicones® (100 mg.); ampuls (250 mg.); liquid (12.5 mg. in each 4 cc.). G. D. Searle & Co., Research in the Service of Medicine.

1. DeWeese, D. D.: Symposium: Medical Management of Dizziness. The Importance of Accurate Diagnosis, Tr. Am. Acad. Ophth. 58:694 (Sept.-Oct.) 1954.
2. Jackson, C., and Jackson, C. L. (editors): Diseases of the Nose, Throat, and Ear, Philadelphia, W. B. Saunders Company, 1945, pp. 368; 414.
3. Queries and Minor Notes: Ménière's Syndrome, J.A.M.A., 141:500 (Oct. 15) 1949.

A new edition of "Dramamine Reviews and Abstracts," containing digests of more than 100 recent articles, is available on request to . . .

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(Continued from Page 358)

The Mediclinics of Minnesota faculty included Dr. Harold F. Buchstein, Dr. Harry B. Hall, Dr. Arthur C. Kerkhof, Dr. Ames W. Naslund, Dr. O. L. Norman Nelson, Dr. Owen F. Robbins, Dr. Albert V. Stoesser, Dr. Robert J. Tenner, Dr. Richard L. Varco and Dr. Edgar A. Webb.

\* \* \*

Dr. F. H. Baumgartner and Dr. R. J. Salk now have their offices in a newly constructed fourteen-room clinic building in Albany. The new structure is known as the Albany Medical Center.

\* \* \*

The newly formed Lay Society of the Twin Cities Diabetes Association is conducting a membership drive aimed at an estimated 15,000 to 20,000 diabetic persons in the Twin Cities area. The society is an offshoot of the medical organization, the Twin Cities Diabetes Association, and will take over sponsorship of the annual diabetes detection drive which physicians have sponsored in the past. The group will devote its attention to educating the public and diabetic persons about the disease.

\* \* \*

Dr. C. R. Myre and Dr. R. J. Lindeman have moved their offices into a new seventeen-room clinic building in Paynesville. The one-story structure, which was recently completed, measures 46 by 56 feet. Facilities are available for a third physician.

\* \* \*

Four new medical consultants have been named to the Mayo Clinic staff. They are Dr. John A. Dyer, ophthalmology; Dr. Joseph M. Kiely, general medicine; Dr. Owings W. Kincaid, radiology, and Dr. Don C. Purnell, general medicine.

\* \* \*

Six Minnesota scientists recently were awarded a total of \$53,000 for cardiac and vascular disease research, according to an announcement by Dr. James A. Cosgriff, Olivia, president of the Minnesota Heart Association. The recipients were Dr. H. Mead Covert, Dr. Hiroshi Kuida and Dr. Victor Lorber, all of the University of Minnesota Medical School; Dr. Alan P. Thal and Dr. Richard DeWall, both of University Hospitals, and Dr. Newton C. Birkhead of the Mayo Foundation, Rochester.

\* \* \*

Dr. Frederick P. Moersch, special consultant in neurology at the Mayo Clinic, Rochester, retired from active service on April 1 after thirty-six years on the clinic staff. A graduate of the University of Minnesota Medical School in 1913, Dr. Moersch joined the Mayo Clinic in 1920. In 1947 he became head of a section of neurology, which position he held until 1950, when he became a senior consultant. He has been president of the American Board of Psychiatry and Neurology, a member of the council of the American Psychiatric Association, and vice president of the American Neurological Association. Dr. Moersch has contributed more than seventy-eight papers to the literature on neurology and psychiatry and is the author of *Neurology and Psychiatry for Nurses*.